Three Essays on Properties, Determinants and Consequences of Accounting Standards

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To the reader

Given that international financial accounting has been an active field in empirical accounting research for decades we know surprisingly little about it. Why are accounting regimes different across countries? How do they differ? Do common accounting rules cause common accounting outcomes? Are common rules desirable? The answers to these fundamental questions are non-trivial. Every effort that helps to solve them step-by-step seems like a good idea.

The dissertation thesis of Timo Eisenschink adds to this literature by providing three independent but inter-related studies. While the first study collects systematic data on the heterogeneity of generally accepted accounting principles (GAAP) across the world, the second paper investigates the reasons for the international heterogeneity of financial accounting regimes. Finally, the last project strives to identify the moderating effect of enforcement on the IFRS adoption effect on earnings quality.

What impresses me most about these three studies is that, taken together, they apply a wide range of methods. The author succeeds in using qualitative survey approaches to address descriptive research questions, analytical modeling to analyze equilibrium outcomes in a rational expectations setting with asymmetric information and 'mainstream' archival methods. Of course, one could start to criticize each and every approach but what I like about it, is that Timo uses creative research designs to attack central questions in the area of international financial accounting rather than using some textbook methodology to address a narrowly defined research question.

The outcome can be labeled as 'gutsy'. We learn that local GAAP regimes tend to be less fair value oriented than IFRS in all countries that Timo has data for. We are offered an efficiency-based explanation for why some jurisdictions might be leaning more towards fair value accounting than others. And we see some evidence that enforcement seems to have no robust effect on the earnings quality effect of mandatory IFRS adoption. The latter result seems less surprising if one thinks about whether the empirical notion of 'earnings quality' is something that we should expect to be enforced, let alone equally so, across countries.

Do these answers ultimately settle the questions mentioned above? Of course not. But they help. Thus, the work of Timo Eisenschink adds to our understanding of the heterogeneous worlds of financial accounting. I hope it will be widely read and used.

Berlin, January 30, 2014

Joachim Gassen

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Die vorliegende Arbeit ist während meiner fünfjährigen Tätigkeit als Wissenschaftlicher Mitarbeiter und Doktorand am Institut für Rechnungswesen und Wirtschaftsprüfung der Humboldt-Universität zu Berlin entstanden. Die Arbeit wurde von der Wirtschaftswissenschaftlichen Fakultät im Sommersemester 2013 als Dissertation angenommen.

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Timo Eisenschink

Contents

An introductory summary

Regulators are constantly seeking for information on the consequences of their activities. Accounting research tries to meet this demand by generating research output that is useful to regulators (Schipper, 1994; Holthausen and Watts, 2001; Barth, 2006; Fülbier, Hitz and Sellhorn, 2009; Kothari, Ramanna and Skinner, 2010). However, extant accounting research is not able to sufficiently meet this demand. For example, Gebhardt (2008: 8), the former chairman of the Financial Reporting Standards Committee of the European Accounting Association, says that the International Accounting Standards Board welcomes accounting research, but "unfortunately, they think that not much of accounting research is really suitable for the purposes of standard-setters". To mitigate this concern, the IFRS Foundation (IFRSF) recently published a new version of the Due Process Handbook which contains an explicit call for evidence-based accounting research to support regulatory activities (IFRSF, 2013: Par. 4.6-4.11). In order to assist researchers in performing evidence-based accounting research, Cascino et al. (2013) suggest a four-stage approach. The first stage comprises descriptive information on the status quo of properties and associations of existing accounting standards. The second stage is supposed to establish causal relationships on a theoretical basis since regulators need to know the cause-effect chain of their work. In the third stage, accounting research needs to empirically test whether these theoretical predictions are consistent with the existing data. Finally, at the fourth stage, accounting research should assist regulators in finding partial optimal solutions by employing an engineering type of normative analysis (also Basu, 2012, on that issue). This thesis relates to different stages of the proposed research program by providing three essays on properties, determinants and consequences of accounting standards that analyze: (1) the extent of fair value oriented accounting principles incorporated in local accounting systems, (2) the underlying institutional characteristics determining the fair value ori-

entation of accounting systems and (3) earnings quality effects of mandatory IFRS adoption conditional on local enforcement systems.

The first paper 'Fair Value Orientation of Local GAAP: Evidence from an Online Survey' provides descriptive evidence on the fair value orientation of existing local GAAP systems by surveying the perception of 137 international accounting academics about the fair value orientation of 28 local GAAP systems. The survey results enable us to rank countries' local GAAP systems by their fair value orientation. We construct a country-level fair value orientation score based on seven accounting principles: (1) revaluation of intangible assets to market value, (2) revaluation of property, plant and equipment to market value, (3) subsequent measurement of trading securities at market value, (4) subsequent measurement of derivatives at market value, (5) subsequent measurement of other financial assets at market value, (6) impairment-only method for goodwill and (7) application of the percentage of completion method. The score ranking shows that Portuguese, Slovenian and Russian GAAP are the top three and Austrian, German and Italian GAAP are the bottom three of the fair value orientation. Furthermore, we are able to show that the fair value orientation of the 2012 version of IFRS is higher than any of the 28 local GAAP systems.

During the subprime mortgage crisis, accounting regulators came under politically driven pressure to rethink fair value accounting, in particular mark-to-model measurement principles (e.g. Forbes, 2008; Wallison, 2008). Prior literature has not yet reached a consensus on the pros and cons of fair value accounting (e.g. Landsman, 2007; Penman, 2007; Laux and Leuz, 2009). This project supports regulators with respect to that debate and in line with the first step of evidence-based standard setting as it constitutes a foundation of the global status quo of fair value orientation. Nevertheless, showing descriptive evidence is only a first step in the process of evidence-based standard

setting. Regulators also need advice on the causal chains of their regulatory interventions. To sufficiently establish these chains, research should develop a theoretical foundation as a second step and subsequently test this theory empirically in a third step.

The second paper 'Financial Accounting System Choice when Objectives Compete' (joint work with Joachim Gassen) follows this approach and examines determinants of the fair value orientation of financial accounting systems. In the first part of the paper, we develop a principal agent model based on Goldman and Slezak (2006) to give a risk-neutral entrepreneur (principal) who has an incentive to smooth consumption the opportunity to choose between two accounting systems. The accounting system is used to solve moral hazard problems with a risk-averse manager who has to run the firm (to provide efficient contracting) as well as to reduce information asymmetries between the manager and an exogenous risk-averse capital market (to provide efficient stock pricing). Although the manager does not know the firm value, she still decides in the first period on the acceptance of the contract, her effort level and the level of discretion she will exert over the accounting report. The firm value is based on the effort level and the productivity of the manager, internal production risk and external market risk. After receiving private information about the firm value, the manager publicly releases a (potentially manipulated) accounting report, which is used by the risk-averse capital market to determine the stock price. In a next step, the entrepreneur sells some stocks to smooth consumption and the manager is paid based on the stock price. In the last period, the firm value is realized and the firm is terminated. The comparative static results indicate that the preference of the entrepreneur for a fair value accounting system increases with the relative importance of the capital market and the outside options of the manager, while it decreases with the overall quality of the accounting signal, the strength of the enforcement system and the productivity of the manager.

In the second part of the paper, we empirically test the predictions of our analytical model. Confirming the theoretical predictions, the empirical results show that the relative size of capital markets is positively related to the fair value orientation of accounting systems and the productivity of the top-level management is negatively related. In addition, we find weak evidence that management opportunity cost is negatively related to fair value orientation. We find no evidence that the level of accounting enforcement is linked to the fair value orientation.

This project is useful for regulators in the sense of the second and third step of evidence-based standard setting, since it clarifies the importance of the institutional environment for the design of an accounting system and therefore explains the observable variance in international accounting systems. Thus, regulators should carefully evaluate potential unintentional consequences (for an overview Brüggemann, Hitz and Sellhorn, 2013) of changing the fair value orientation of an accounting system conditional on the general institutional environment. Our paper shows that, for instance, the relative importance of capital markets gives an efficiency-based explanation for the fair value orientation of a given accounting system. Thus, changing this system towards historical cost as a response to a negative public perception of fair value accounting might result in (additional) inefficiencies.

The third paper 'Mandatory IFRS Adoption, Changes in Enforcement and Earnings Quality' investigates whether potential financial reporting effects of changing an accounting system depend on the efficiency of the enforcement system. To harmonize financial accounting of European firms, the European Union requires listed firms to apply IFRS for their consolidated financial statements with the beginning of 2005. In addition, the European Union harmonized institutional oversight enforcement activities of its member states. European countries were forced to install an enforcement system

that ensures a correct application of IFRS. For example, the enforcement system should review financial reports on a proactive basis by using a risk-based approach and should ensure that detected errors will be disclosed. As a consequence, Finland, Germany, the Netherlands, Norway and the UK created new enforcement systems or shifted from a reactive to a proactive enforcement system whereas other European countries already had an enforcement system in place that encompasses the required measures.[1]

Since prior literature suggests that earnings quality is shaped by accounting standards as well as their enforcement (e.g. Holthausen, 2009; Leuz, 2010), we believe that earnings quality effects of mandatory IFRS adoption in the European Union should vary across these two groups: (1) IFRS adoption with a strict enforcement system and (2) IFRS adoption and a concurrent shift from a weak to a strict enforcement system. Using a sample of 24,596 firm-year observations from 13 EU countries and 14 benchmark countries to control for general macroeconomic effects, we investigate four earnings quality measures: income smoothing, accrual quality, small positive earnings and timely loss recognition. We find weak evidence that adopting IFRS with a strict enforcement system is associated with less income smoothing in comparison to countries that substantially changed their enforcement system. However, we are not able to find statistically significant differences between changing and strict enforcement countries with respect to accrual quality, small positive earnings and timely loss recognition.

While this project produces null results, it is nevertheless useful for regulators in the sense that it attempts to relate to the second and third step of evidence-based standard setting. Although mandatory IFRS adoption is expected to increase earnings quality (Armstrong et al., 2010), the paper shows

[1] Norway is not an European Union member state but belongs to the European Economic Area. For simplicity, we treat Norway as an European Union member state.

that this aim is not achieved, even if the accounting changes are strictly enforced by an enforcement institution.

Although the thesis does not directly speak to the fourth stage of evidence-based standard setting, the results can be interpreted as contributing to the last stage, the regulatory engineering. Accounting systems are supposed to operate as a single input device in heterogeneous contracting (Ball, 2001). Therefore, financial reporting systems are usually designed as 'general purpose systems' (e.g. IASB Framework: OB.12). This is demanding, as regulators have to acknowledge claims of various economic agents affected by these systems and hence regulatory interventions might not necessarily result in pareto-superior solutions. Thus, regulating accounting systems always requires a balancing of different partial optimal solutions for various groups. For example, the second paper offers such solutions as it shows that fair value oriented systems are, inter alia, an efficient response to the importance of capital markets in unregulated settings. Thus, moving accounting systems towards fair value measurement is, ceteris paribus, a partial optimal solution for capital market participants. In the end, it is the responsibility of the regulator to decide whether she wants to derive this partial optimal solution.

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Fair Value Orientation of Local GAAP: Evidence from an Online Survey

Timo Eisenschink

Abstract: This project investigates the fair value orientation of local GAAP systems worldwide. Based on survey results from 137 accounting academics from 28 countries, we present information about the accounting framework and 17 recognition and measurement principles for each country. We show for most accounting principles that local GAAP systems are relatively harmonized. However, differences in the cross-country fair value orientation basically arise from different subsequent measurement concepts for financial assets and goodwill. The survey results enable us to rank local GAAP systems by their fair value orientation. Therefore, we construct a country-level score based on seven accounting principles. Our results show that Austrian, German and Italian GAAP have the lowest and Portuguese, Slovenian and Russian GAAP have the highest fair value orientation. In addition, we are able to show that all local GAAP systems are less fair value orientated than IFRS, which makes IFRS the top fair value accounting system worldwide.

Keywords: Local GAAP, Fair Value Orientation, Online Survey

1 Introduction

In the last twenty years the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) replaced historical cost accounting with fair value accounting for a variety of accounting transactions (Emerson, Karim and Rutledge, 2010). For example, International Financial Reporting Standards (IFRS, formerly IAS) mandates or allows using fair values for the initial and subsequent measurement of financial assets, intangibles as well as property, plant and equipment and for impairment purposes.[1] Reasons for the shift towards fair value accounting are the liberalization of the capital markets worldwide (resulting in an increase of securities liquidity and supposedly new financial products) and the development of appropriate valuation models (Ball, 2006). However, although fair value estimates are currently being used more and more, fair value accounting is a highly debated issue in the financial accounting literature. Proponents argue that fair value accounting satisfies the information needs of shareholders by providing decision useful information. Also, in comparison to historical cost accounting, fair value accounting is assumed to be more directly linked to true economic performance. Contrarily, opponents argue that if fair values have to be estimated by the management (mark-to-model), fair value measurement lacks reliability because it depends on estimation models and managerial judgment. Furthermore, some raise concerns about the use of fair values in times of a financial crisis or a bubble (see for a discussion about fair value accounting Landsman, 2007; Penman, 2007; Laux and Leuz, 2009; Barth and Landsman, 2010).

In this context, researchers often highlight the dominant role of fair value accounting in IFRS and US GAAP and thus implicitly assume that fair value

[1] See Cairns (2006) for an overview about the implementation of fair value accounting into IFRS.

accounting does not play an important role in other local GAAP systems (e.g. Benston, Bromwich and Wagenhofer, 2006; Barth, 2008; Botzem and Quack, 2009; Kothari, Ramanna and Skinner, 2010; Fiechter, 2011). However, descriptive evidence about the fair value orientation (FVO) of local GAAP systems worldwide is rare and thus the empirical question to which extent fair value accounting is incorporated into IFRS (and US GAAP) relative to other local GAAP systems is open.

We add to this by providing survey-based details on the perception of 137 international accounting academics from 28 countries about the FVO of their home countries' local GAAP system that applies to non-financial firms. Fair value measures are used for a variety of accounting treatments. For example, fair values are prominently used for the measurement of financial assets, but goodwill impairment tests require fair value measurements as well. We define FVO as the extent to which fair values are used in financial accounting. Thus, we use the term FVO in a broad sense including all treatments in which fair values are used.[2]

We present survey-based details about general characteristics of local GAAP systems as well as main recognition and measurement principles for five different asset classes: (1) intangible assets, (2) goodwill, (3) property, plant and equipment (PPE), (4) financial assets and (5) long-term contracts. Our results show that only a few countries allow using fair value accounting for the subsequent measurement of non-financial assets. Fair value accounting is primarily used for impairment purposes and the subsequent measurement of financial assets. We also show that most accounting principles are harmonized across countries and that differences in the worldwide FVO predominantly arise from deviations in the subsequent measurement of trading securities and

[2] In a narrow sense, FVO solely encompasses the subsequent measurement of assets and liabilities at fair value.

derivatives (historical cost versus fair value) as well as in the subsequent measurement of goodwill (amortization method versus impairment-only method).

Relying on the survey results, we are able to rank countries across their FVO. In doing so, we derive a country-level FVO score ($FVOSCORE$) based on the following seven principles: (1) revaluation of intangible assets to market value, (2) revaluation of PPE to market value, (3) subsequent measurement of trading securities at market value, (4) subsequent measurement of derivatives at market value, (5) subsequent measurement of other financial assets at market value, (6) impairment-only method for goodwill and (7) application of the percentage of completion (PoC) method. Results suggest that Portuguese, Slovenian and Russian GAAP are the top three, US GAAP are the top four and Austrian, German and Italian GAAP are the bottom three of the FVO. Comparing the $FVOSCORE$ with the FVO of the 2012 version of IFRS reveals that all local GAAP systems are less fair value oriented than IFRS, which makes IFRS the top FVO accounting system worldwide. In addition, we use the survey results to classify local GAAP systems. The classification results provide information about the harmonization of local GAAP systems and thus contribute to the current harmonization debate.

This paper continues as follows: Section two presents prior literature. In section three, we present the survey design and the survey results. Section four concludes.

2 Prior Literature

Literature on properties of local GAAP systems goes back to the 1970s. Since then the former audit company Price Waterhouse provides a database for 64 countries about financial accounting recognition, measurement and disclosure treatments using a seven step ordinal scale (Fitzgerald, Stickler and Watts, 1979). Based on this data, various studies examine the beginning of the inter-

national accounting convergence process (see for an overview Tay and Parker, 1990). Some years later, the audit company Coopers and Lybrand (1993) issued a detailed summary about the recognition, valuation and disclosure of 20 financial statement items for 37 countries. In the same period, Ordelheide and KPMG (1995) provide information for 19 developed countries (plus IAS) about recognition, valuation and disclosure treatments. Basu, Hwang and Jan (1998) rank ten developed countries across three properties of accounting systems: (1) the extent of accrual accounting, (2) market value orientation and (3) the level of accounting choices. Hung (2001) develops an accrual index of eleven accounting treatments for 21 countries based on the Coopers and Lybrand data. Ashbaugh and Pincus (2001) also use the Coopers and Lybrand overview to construct a local GAAP score for 13 countries based on differences across eight disclosure and four measurement principles.

Recent large sample size descriptive evidence is provided by the 'GAAP 2001' survey (Nobes, 2001). This study presents deviations of local GAAP to IAS relating to 80 accounting measures and disclosures for 62 countries.[3] The survey asks partners from seven big international audit companies to evaluate how local GAAP systems significantly differ from IAS. Relying on the 'GAAP 2001' survey three studies construct measures capturing the difference or distance between IAS and local GAAP systems. Street (2002) summarizes the 'GAAP 2001' survey and ranks countries based on the number of total differences. Ding et al. (2007) summarize GAAP differences with the variables absence and divergence. Absence covers whether a specific accounting treatment is regulated in IAS but not in local GAAP. Divergence covers whether a transaction is treated differently in IAS and local GAAP. Bae, Tan and

[3] For example, the 'GAAP 2001' survey comprises recognition, measurement and disclosure principles for financial instruments, provisions, employee benefits, income taxes, business combinations and related parties.

Welker (2008) construct a GAAP differences score based on 21 key accounting items.

Using the 'GAAP 2001' survey results has certain limitations for several reasons. For one, the survey was not designed for academic purposes. Rather, it aims to serve audit companies as a basis for the argumentation that a high variance of the quality of local GAAP systems across countries exists and that correspondingly, low quality GAAP systems are responsible for low quality financial accounting statements (Nobes, 2009). Also, the survey does not give deeper insight into accounting treatments, as it solely indicates whether local accounting rules deviate from IAS without providing further details. Additionally, deviations of local accounting principles from IAS only reflect one side of the coin. Equivalent principles or principles that are regulated in local GAAP but not in IAS are not presented in the survey and thus results are not comparable across countries. Furthermore, the survey considers local GAAP systems as of 2001. Over the last 10 years, financial accounting regulation have faced tremendous changes. We therefore believe that there is a demand for new insights about properties of local GAAP systems.

This study is closely related to Gassen and Eisenschink (2013). In the empirical part of their paper, the authors develop three alternative measures assessing the FVO of local GAAP systems in order to test the theoretical predictions of their analytical model.[4] The first measure is based on archival firm-year data of accounting outcome and is the first principal component of five output-based measures. The second and third measures are input-oriented and

[4] In their analytical model Gassen and Eisenschink (2013) let an entrepreneur (principal) decide between two noisy accounting systems. The first system is labeled as historical cost while the second (is labeled) as fair value. The accounting system is used for contracting with a manager (agent) and for communicating the firm value to a risk-averse capital market. Their comparative static results indicate that the preference of the entrepreneur for a fair value accounting system increases with the relative importance of the capital market and the outside options of the manager, while it decreases with the overall quality of the accounting signal, the strength of the enforcement system and the productivity of the manager.

use information from a de jure standpoint. For the second metric, the authors use practitioner publications supplied by the audit profession to self-assess the FVO of local GAAP systems for 18 countries. The third measure is based on the survey results of this study. The authors show that the relative size of the capital market is positively related to the FVO of local GAAP systems and the productivity of the top-level management is negatively related. They also find weak evidence that management opportunity cost is positively related to the FVO of local GAAP systems. This study differs from Gassen and Eisenschink (2013) in the respect that we present detailed survey-based results about general characteristics as well as main recognition and measurement principles of 28 local GAAP systems. We do not develop a particular theoretical model to investigate determinants of the FVO of local GAAP systems. Our results should solely be interpreted in a descriptive manner.

3 Fair Value Orientation of Local GAAP Systems

3.1 Survey Design

To investigate the FVO of local GAAP systems researchers can apply an archival research design by using aggregate financial statement information from commercial databases. The fraction of fair-value assets and liabilities could be an indicator for the FVO. However, drawing conclusions from this archival research design is not trivial, as accounting outcome is also affected by firms' incentives and thus does not necessarily vary with different accounting systems (e.g. Ball, Kothari and Robin, 2000; Ball, Robin and Wu, 2003; Leuz, Nanda and Wysocki, 2003; Bushman, Engel and Smith, 2006).[5] Since the focus of this project is to provide de jure information about the FVO of local GAAP systems, we think addressing this research question requires a different approach.

[5] For a discussion of the low internal validity of archival studies see Libby, Bloomfield and Nelson (2002).

Conceivably, there are various research methods that can be used. One possible approach is to directly observe the FVO of local GAAP systems by simply analyzing countries' local standards. However, accounting standards are complex and technical and in most cases have to be interpreted cautiously. Classifying foreign accounting systems requires knowledge about the particular local institutional background (in addition to profound accounting skills). Thus, we believe that self-assessment of local accounting standards leads to translation and interpretation errors.

Another possible research method would be structured interviews of domestic accounting experts. Structured interviews could be used to understand recognition and measurement concepts of local GAAP systems. While it is very costly in terms of effort, time and money to interview more than one expert per country, the reliability (internal validity) of these data is unclear. In particular, interview statements could be biased toward personal beliefs and preferences and thus may potentially not be fact-oriented.

Therefore, we decide to apply an online survey design to increase responses per country and thus to increase the validity of the results. Furthermore, survey responses are usually anonymous, which lowers the threat of untruthful responses (Groves et al., 2004). The survey is pretested with ten German accounting experts. The aim of the pretest is to increase comprehensibility and to decrease potential ambiguity of the survey questions. According to the feedback and responses, we editorially change some questions. We also condense the survey by eliminating unnecessary questions.

The online survey is structured in three sections: Section A contains four subsections (A1-A4) asking respondents for information about overall institutional characteristics of their home country's local GAAP system. In subsection A1, respondents are supposed to indicate their country of origin (home country). Subsection A2 asks whether the home country has a local

GAAP system differing from IFRS. If a respondent's answer to A2 is negative, they do not proceed with the survey beyond this point. All other participants continue with the questionnaire and are asked in A3 to indicate which set of GAAP private and public non-financial firms have to apply in their individual and group financial statements. Subsection A4 includes four questions about general institutional properties of local GAAP systems. Section B contains six subsections (B1-B6) asking to characterize local GAAP properties that apply to non-financial firms. Subsection B1 includes six questions about the local GAAP accounting framework and subsections B2-B6 include 17 questions about recognition and measurement principles of five different asset classes. Section C collects personal information in order to identify the respondents' exposure to financial accounting.[6]

In subsections A4 and B1 respondents are asked to give an opinion based on a five-point Likert scale. In subsections B2-B6 respondents are asked to decide whether a certain recognition or measurement for a specific asset class is prohibited, allowed or mandatory. All other subsections contain closed-ended questions (A1-A4). All questions can be marked as 'can't say'. Respondents are also given the option to leave comments in every subsection. The total time necessary to complete the survey is on average 14 minutes. Participation is anonymous and we do not provide incentives. The questionnaire is shown in the appendix.

We perform the survey in three separate waves: In the first wave we collect 987 e-mail addresses from participants of the 2011 American Accounting Association (AAA) annual conference and the 2011 European Accounting Association (EAA) annual conference. We send out invitation e-mails on January

[6] The survey includes seven additional questions about general institutional properties in subsection A4 and three additional questions about recognition and initial measurement of provisions in subsections B7 and B8. We decide to drop these questions, as for A4 we obtain low variance across countries and for B7 and B8 most respondents answer is 'can't say'.

26, 2012 and a reminder on February 22. We close the first survey wave on March 1. Since responses from the first wave predominantly stem from North America and Europe, we collect in a second wave 777 e-mail addresses from web pages of universities' accounting departments located in South America, Asia and South Africa. Invitation e-mails are sent out on March 5 and reminders are sent on March 12. The second wave is closed on March 21. Overall, we receive 166 responses from 46 different countries in the first two waves. This results in a response rate of 9.41%.[7] Since we require having at least three responses per country, we subsequently approach 1,084 researchers from countries with less than three responses in a third wave.[8] We send out invitation e-mails on December 3 and a reminder on December 11. The third wave is closed on December 17 and yields 51 responses from 30 countries (response rate of 4.70%).[9] In total, we approach 1,831 researchers in all three waves and receive 217 responses from 46 countries. The overall response rate of 11.85% is lower than in other studies surveying accounting and finance academics.[10]

Ballas and Theoharakis (2003) ask international accounting academics to peer review international accounting journals and receive a response rate of 20.6%. Lowe and Locke (2005) investigate the same research question when surveying UK accounting academics and obtain a response rate of 15.6%. Brinn, Jones and Pendlebury (2001) receive a response rate of 23.6% in their survey of UK accounting academics about the reason why UK accounting researchers tend to prefer to publish in UK journals rather than top US journals. Note that response rates depend, among other things, on the particular target population and the topic of the survey (Baruch, 1999; Sax, Gilmartin and Bryant, 2003). Thus, surveying academics from local universities and insti-

[7] If respondents answer to A2 is negative, they do not proceed with the survey beyond this point, which probably biases the response rate upwards. Accordingly, the adjusted response rate including these responses is 6.58%.

[8] This includes 67 new e-mail addresses which we collect for the third wave.

[9] The adjusted response rate for the third wave is 3.32%.

[10] The adjusted overall response rate is 8.30%.

tutes or surveying a topic which most academics are interested in should lead to a higher response rate than in this study.

3.2 Survey Results

Our total response sample consists of 217 observations from 46 countries. 64 respondents specify in A2 that their local GAAP system does not differ from IFRS and thus are excluded from the sample. We label countries in which more than 50% of respondents indicate that their home country has a local GAAP system 'not differing from IFRS' as IFRS countries: Australia, Brazil, Hong Kong, Indonesia, Malaysia, New Zealand, Singapore and South Africa.[11] Accordingly, we limit our sample to respondents from non-IFRS countries. This results in a local GAAP respondents' sample with 153 observations. We further limit the sample to respondents who fully complete sections A and B.[12] Hence, the sample contains both fully and partially (no answers in section C) complete surveys. Additionally, we require that every country has at least three responses, which results in a final sample of 137 responses from 28 countries.

Table 1, Panel A reports the distribution of the respondents' academic position, which is as follows: 52.55% are tenured professors, 31.39% are lecturers or assistant professors, 10.22% are other teaching staff or doctoral students and 5.84% do not provide positions. Turning to years of teaching experience, 6.57% have teaching experience under three years, 13.87% have teaching experience between three and five years, 27.01% between six and ten years, 43.80% have teaching experience over ten years and 8.75% do not provide information on teaching experience. The teaching experience of the respondents is on average ten years, which makes us confident that our respondents have (on average) expertise in financial accounting. Panel B shows the number of respondents

[11] We use several sources (PwC, 2013, local standard setters webpages and the Deloitte 'IFRS Plus' webpage) for verification.

[12] However, it was possible to mark questions as 'can't say'. We delete respondents who marked more than one-third of survey questions in sections A and B as 'can't' say'.

per country. Germany has the highest number with twelve responses followed by Italy and Portugal with both eight and the US with seven responses.

[Table 1 about here]

Table 2 presents information about overall institutional characteristics of the respective countries. In subsection A3 respondents are asked to specify which set of GAAP (local GAAP (LGAAP), IFRS, or both (LGAAP/IFRS)) private and publicly-listed non-financial firms must apply for their individual (single legal entity) and group financial statements. Three countries (Argentina, Taiwan and the US) require an application of local GAAP for individual and group statements for private and publicly-listed firms. All other countries require local GAAP only for private firms, whereas in ten (19) countries private firms have the option to apply IFRS for individual (group) statements. In contrast, IFRS is mandatory for group statements of publicly-listed firms in most countries.[13] Results for individual statements of publicly-listed firms are mixed. Roughly, one-third mandates, one-third allows and one-third prohibits the application of IFRS.[14] Based on the survey results in subsection A4, we develop measures for the codification in governmental law (GOVLAW), the type of standard setter (PRISETTER), the relationship of financial accounting with tax accounting (TAXLINK) and the level of guidance offered by the local GAAP system (GUIDANCE). Respondents are asked to rate the questions on a five-point Likert scale from one (strongly disagree) to five (strongly agree). We label countries as having a local GAAP system that is codified in govern-

[13] Please note that our sample contains 17 countries from the European Economic Area (EEA) covering the 28 EU member states plus Iceland, Liechtenstein and Norway. Publicly-listed firms located in the EEA are mandated to apply IFRS for group statements.

[14] EU (2010) provides an overview of the status of implementation of IFRS for countries located in the EAA. Comparing this overview with the results in Table 2 reveals a high degree of consistency. Solely, results of the UK differ in the respect that according to EU (2010) private firms can choose between local GAAP and IFRS for their individual and group statements and that publicly-listed non-financial firms can also choose between local GAAP and IFRS for their individual statement.

mental law (GOVLAW=1) if country-level median responses (strongly) agree with the statement 'local GAAP are codified in governmental law'. We label countries as having a private standard setter (PRISETTER=1) if country-level median responses (strongly) agree with the statement 'relevant local GAAP are developed by a private standard setter'. We label countries as having a strong tax link (TAXLINK=1) if country-level median responses (strongly) agree with the statement 'local GAAP are closely related to tax regulation'. We label countries as having a local GAAP system providing a high level of guidance (GUIDANCE=1) if country-level responses (strongly) disagree with the statement 'local GAAP offer less explicit guidance than IFRS'. Accordingly, in 21 countries local GAAP systems are codified in governmental law, in 15 countries local GAAP systems are developed by a private standard setter, in 14 countries local GAAP systems are closely related to tax regulation and 17 countries have a local GAAP system that provides extensive guidance.[15]

[Table 2 about here]

Table 3 reports the results for questions about the local GAAP accounting framework. Again, respondents are asked to rate questions on a five-point Likert scale from one (strongly disagree) to five (strongly agree). Results are presented as country-level medians with standard deviations of the responses in brackets. In the vast majority of countries (except Argentina, Mexico and South Korea) respondents (strongly) agree with the statement 'historical cost is the predominant measurement concept'. Results for the statement 'mark-to-market is only used whenever market prices are observable' are mixed: Respondents in Mexico strongly agree with the statement, whereas respondents in eight countries agree, 15 countries are neutral and four disagree. The next four statements account for the fact that market values are used for impairment

[15] The 'GAAP convergence 2002' survey supplies an overview of accounting systems that are tax-driven (Street, 2003). Comparing both metrics reveals a consistency rate of over 75%.

treatments (when market values are below book values) and market values are used for subsequent measurement purposes when market values are above book values (revaluation model or measurement at market value). Again, in the vast majority of countries (except Mexico and Russia) respondents (strongly) agree with the statement that 'mark-to-market is relevant when market values are below book values'. This result indicates that most local GAAP systems mandate using the 'lower of cost or market concept' for the subsequent measurement of assets. In contrast, the vast majority of country-level opinions disagrees or is neutral with respect to the statement 'mark-to-market is relevant when market values are above book values'. The last two statements refer to whether 'certain losses/gains can be reflected directly in equity without affecting net income'. Respondents in four countries (strongly) disagree with the statements, implying that losses or gains from market based measurement are recognized in the profit or loss statement (Argentina, Austria, Germany and Japan), whereas in twelve countries respondents (strongly) agree with the statements, which implies that losses or gains are predominantly reflected directly in equity.

[Table 3 about here]

Table 4, Panel A-C presents the results for recognition and measurement principles. Respondents are asked to assess whether a certain recognition or measurement principle is prohibited (1), allowed (2) or mandatory (3). Again, results are presented as country-level medians with the standard deviation of the responses in brackets.[16] Panel A provides the results for intangible assets. In four countries, the capitalization of research and development expenditures is prohibited (Austria, Japan, Taiwan and the US), nine allow the capitalization of research expenditures and only three mandate the recognition of

[16] Please note that if the country-level median does not provide a clear classification (integer number), we treat the country-level observation as if the median response would be 'allowed' in the following table description.

development expenditures (Denmark, the Netherlands and Russia). The next question asks whether intangible assets are deemed to be impaired if market values are below book values. Impairments are mandatory in 15 countries, allowed in eleven and prohibited in two (Greece and Poland). Revaluation of intangible assets to market value is only allowed in four countries (Mexico, Portugal, Russia and Slovenia). All other countries forbid the usage of the revaluation model.

Panel B provides the results for goodwill and PPE. Mexico and Russia allow the recognition of internally generated goodwill, whereas this accounting treatment is prohibited in the remaining countries. The recognition of goodwill resulting from a business combination is mandatory in 19 countries and allowed in nine. Conceptually, there exist two different subsequent measurement treatments for goodwill: the amortization method and the impairment-only method. Eleven countries mandate the use of the amortization method and eight mandate the impairment-only method. Results for impairment of PPE are equivalent to the results for impairment of intangibles: Impairments are mandatory for over half of the countries, allowed for over one-third and prohibited in two (Greece and Poland). Revaluation of PPE to market value is allowed in ten countries and prohibited in 18.

[Table 4 about here]

Panel C shows the results for financial assets and the application of the percentage of completion (PoC) method for long-term contracts. The measurement of financial assets usually depends on different financial asset classifications. We assume that financial assets can be classified into assets that are held for trading purposes (trading securities), derivative securities and other financial assets. 22 countries mandate an impairment of trading securities and derivatives if market values are below book values. Impairments for other financial assets are mandatory in 15 countries and voluntary in 13. Subsequent

measurement at market value is prohibited for all three financial asset classes in Argentina, Austria, France, Germany, Italy and Turkey. However, measurement at market value for trading securities (derivatives) is mandatory in ten (13) countries and allowed in eleven (nine). Fair value measurement for other financial assets is allowed in 18 countries and prohibited in ten. Considering the PoC method reveals that the application of the PoC method for long-term contracts is prohibited in Austria, the Czech Republic and Germany, allowed in 22 countries and mandatory in Denmark, Poland and Portugal.

Altogether, our results show small accounting differences across countries with respect to the prohibition of recognizing internally generated goodwill, the prohibition of applying the revaluation method for intangible assets, the mandating of impairing trading securities and derivatives if market values are below book values as well as the allowance for applying the PoC method for long-term contracts. However, large accounting differences exist for the subsequent measurement of goodwill (amortization method versus impairment-only method) and for the subsequent measurement at market value of trading securities and derivatives.

The survey results presented above give us the opportunity to assess the FVO of local GAAP systems. In doing so, we rank the local GAAP systems based on the following seven principles: (1) revaluation of intangible assets to market value, (2) revaluation of PPE to market value, (3) subsequent measurement of trading securities at market value, (4) subsequent measurement of derivatives at market value, (5) subsequent measurement of other financial assets at market value, (6) impairment-only method for goodwill and (7) application of the PoC method. For every principle, we assign two points if the principle is mandatory, one point if the principle is allowed and zero points if the principle is prohibited. The total points across the seven principles normalized to one compose the FVO score ($FVOSCORE$).

Most accounting systems offer a choice between different accounting treatments. For example, IAS 16 allows using the historical cost model or the revaluation model for the subsequent measurement of PPE. Depending on which accounting options are chosen, the FVO of accounting systems has an upper and a lower bound. Therefore, we assess the maximum possible and the minimum possible FVO of local GAAP systems. For the maximum possible FVO ($FVOMAX$) two points are given if the principle is mandatory or allowed and zero points are given if the principle is prohibited. For the minimum possible FVO ($FVOMIN$), two points are given if the principle is mandatory and zero points are scored if the principle is allowed or prohibited. Similar to $FVOSCORE$, the summation of points is scaled to one and constitutes $FVOMAX$ and $FVOMIN$.

The values of $FVOSCORE$, $FVOMAX$ and $FVOMIN$ and the corresponding country rankings are illustrated in Figure 1 and Table 5. The $FVOSCORE$ ranges from 0.00 to 0.71 with higher values indicating more fair value orientation (FVO). The country ranking shows that Portuguese, Slovenian and Russian GAAP are the top three, US GAAP are the top four and Austrian, German and Italian GAAP are the bottom three of the worldwide FVO. For comparison reasons, we assess the FVO of the 2012 version of IFRS based on a separate survey with six German accounting academics and obtain a score of 0.79. Thus, any local GAAP system (including US and UK GAAP) is less fair value oriented than IFRS, which makes IFRS the top FVO accounting system worldwide. Considering the maximum possible FVO ($FVOMAX$) reveals that Mexico, Russia and Slovenia have a score of 1.00. In contrast, 10 countries have a minimum possible FVO of 0.00. Again, the minimum and maximum FVO of the 2012 version of IFRS serves as a benchmark. The results show that the maximum possible FVO of six countries is smaller than the minimum possible FVO of IFRS.

[Figure 1 and Table 5 about here]

3.3 Comparison with Existing Distance Measures

As mentioned above, big sample size information about the cross-country variance of local GAAP systems already exist. Thus, a justification for providing new data is not trivial. Since distance (or difference) measures that rely on the 'GAAP 2001' data usually measure different constructs rather than the FVO of local GAAP systems per se, we expect that only a weak relationship between the $FVOSCORE$ and the distance measures exists. In that respect, three different distance measures proposed by Street (2002), Ding et al. (2007) and Bae, Tan and Welker (2008) serve as comparison constructs. Given the assumption that local GAAP systems with a high FVO do not considerably differ from IFRS, the fair value orientation score ($FVOSCORE$) should be negatively correlated with the distance measures.

Table 6 reports the Spearman correlation results. The correlation coefficients between the three measures vary between 0.58 and 0.78, which is (intuitively) not surprising. $FVOSCORE$ and the Street (2002) distance measure are correlated by -0.24. $FVOSCORE$ and the Bae, Tan and Welker (2008) measure are correlated by -0.30 and $FVOSCORE$ is correlated to the Ding et al. (2007): Divergence measure by -0.21. Altogether, $FVOSCORE$ is only weakly correlated with all three distance measures, which makes us confident that the FVO of local GAAP systems cannot be approximated by the distance scores.

[Table 6 about here]

3.4 Fair Value Accounting Classification

Nobes and Parker (2012: 57) argue that classifications are an important technique to "reveal underlying structures and enable prediction of the properties of an element based on its place in a classification". Thus, classification of local GAAP systems provides possible explanations for local GAAP similarities and differences worldwide and therefore, for example, for the degree of the harmonization of local GAAP systems. Depending on the individual classification parameters, similar local GAAP systems are grouped into the same cluster. Classification parameters could be derived from institutional characteristics like cultural, economic, political and social dimensions or they directly relate to different properties of accounting standards (Krisement, 1994: 11-12).

Early studies that distinguish local GAAP systems mainly apply deductive approaches based on institutional characteristics as classifying variables. Thus, they do not employ statistical methods but use institutional characteristics as an explanation for the shape of local GAAP systems. For example, Seidler (1967) argues that based on economic, political and legal factors, local GAAP systems could be classified into Anglo-American, British and continental European groups. With the beginning of the seventies, the audit company Price Waterhouse makes information about measurement and disclosure treatments of local GAAP systems available. This stimulates a variety of researchers to use statistical methods (e.g. factor analysis, principal component analysis and discriminant analysis) to predict clusters. Results of this stream of literature are heterogeneous in the number of detected clusters, which vary from two to 12, but most studies find support for the existence of an Anglo-American, British, continental European and Latin American cluster. Later studies proceed to investigate whether the detected clusters can be explained with institutional factors (for an overview of the classification literature see d'Arcy, 2001).

In a more recent study, d'Arcy (2001) collects data from Ordelheide and KPMG (1995) and examines 14 developed countries plus IAS. She shows that accounting systems are relatively similar in continental Europe, except for Sweden and Spain that form an own cluster. However, she is not able to identify an Anglo-American cluster. Nobes (2011) uses archival accounting data from large listed firms to investigate similarities in the accounting practice among eight countries that mandate listed firms to apply IFRS. Although all firms follow the same accounting rules, he provides evidence that an Anglo-American (Australia and the UK) and a continental European cluster do exist. Thus, differences in the reporting practices are still present among these groups.

To sum up, there is a rich literature on the classification of local GAAP systems. However, this stream of literature uses information that is now obsolete or outdated. Since the survey results allow us to perform a cluster analysis, we contribute to the extant literature by using very current information about local GAAP systems for a big sample of countries.

We follow d'Arcy (2001) and Nobes (2011) and first employ the method of average-linkage between groups. It is a hierarchical clustering method that presents information about similarities among observations by a tree diagram (dendrogram). Countries are connected by vertical lines forming groups and the height and the length determine the level of similarity between groups. The data for the analysis consist of the results of the 17 accounting principles presented in Table 4 (subsection B2-B6 of the survey). Since the data is ordinal scaled, we follow d'Arcy (2001) and transfer it into a nominal scale by splitting (dichotomizing) each accounting principle into two new variables. We record 0,0 if the principle is prohibited, 1,0 if the principle is allowed and 1,1 points if the principle is mandatory. The dendrogram is presented in Figure 2. Argentina, Austria, Germany and Italy form a cluster that is highly separated from the others. Poland forms its own cluster. A further cluster is composed

of Mexico, Portugal, Slovenia and the Russian Federation, other clusters are very small and hard to detect.

[Figure 2 about here]

Since the average-linkage method already forces countries into clusters, d'Arcy (2001) and Nobes (2011) propose to apply the multidimensional scaling (MDS) method to evaluate the average-linkage (dendrogram) cluster results. The MDS method shows the degree of similarity by geographic distance among countries and thus displays similarities in a more comprehensive way without forcing countries into clusters. Results are presented in Figure 3. The MDS method supports the results of the dendrogram, but however, clusters are easier to identify. Therefore, we group countries into six different self-defined clusters, whereas 'cluster 1' is least and 'cluster 6' is most fair value oriented.

[Figure 3 about here]

3.5 Robustness Tests

We test the validity of the results. First, we check for aberrant responses such as low variation in the responses or, in an extreme case, no variation (identical responses to all questions). However, we are not able to identify unusual response patterns. Next, we investigate whether respondents with an extreme short or long time for completion the survey (duration) bias the results. To address this concern, we exclude all respondents with durations under five minutes and over 40 minutes. We obtain qualitatively similar results for all countries except for Taiwan for which the FVO strongly increases. We also investigate whether results are related to respondents' personal characteristics (academic position and teaching experience), but do not find evidence for this phenomenon. Furthermore, there is the concern that sampling error and/or non-response bias affect the results, which questions validity (Groves et al., 2004). Sampling error is the possibility that our results are not represen-

tative for the entire population (Sills and Song, 2002). For every country, all accounting academics represent the entire country-level population. Non-response bias refers to the possibility that the answers from respondents differ from those of non-respondents (Sax, Gilmartin and Bryant, 2003). Armstrong and Overton (1977) claim that late respondents are to some extent comparable to non-respondents. Accordingly, they propose to compare early with late respondents entries. We follow this proposition in several ways. First, we investigate whether the responses differ across the three separate survey waves. Second, we examine early and late responses within the individual survey waves. However, there is no indication that non-response bias is a problem in this survey.

4 Conclusion

Despite the current process of international accounting harmonization, local GAAP systems continue to play an important role for a huge number of firms worldwide as they are used in different contractual settings and for valuation purposes. However, there is surprisingly little descriptive evidence on the international heterogeneity of local GAAP systems. Therefore, the aim of this study is to provide descriptive evidence about the fair value orientation (FVO) of local GAAP systems.

This survey collects the views about general characteristics as well as main recognition and measurement principles of 137 financial accounting academics from 28 countries. Results show that local GAAP systems are harmonized for most accounting principles. However, differences in the cross-country FVO basically arise from different subsequent measurement concepts for financial assets and goodwill. The survey results enable us to rank countries' local GAAP systems across their FVO. Therefore, we construct a country-level FVO score ($FVOSCORE$) based on seven accounting principles. The score ranking shows that fair value accounting is most incorporated into Portuguese, Slove-

nian and Russian GAAP, whereas fair value accounting is least incorporated into Austrian, German and Italian GAAP. Furthermore, we are able to show that the FVO of the 2012 version of IFRS is higher than any of the 28 local GAAP systems.

There are several limitations to our study. First, our country-level response rate is low and ranges from three to 12 responses, which raises internal validity concerns. We cannot rule out that respondents misinterpret some questions, simply guess or that answers are biased towards personal beliefs and preferences. Nonetheless, we try to address this concern by pretesting the survey in order to obtain a consistent understanding of the survey questions. However, survey studies with a small sample size are always limited in terms of internal validity. Second, we investigate the FVO of local GAAP systems from a de jure standpoint. De jure accounting principles may differ from the de facto accounting practice (Tay and Parker, 1990; Nobes, 1998). One reason could be that most accounting systems require meeting specific criteria for an accounting treatment and it often depends on management judgment whether or not specific criteria are met (the so-called implicit accounting option). Another explanation could be that an accounting issue is not regulated in local GAAP and thus every accounting practice is (de jure) possible. In addition, de jure accounting principles could differ from the accounting practice because of a weak accounting enforcement environment. Thus, researchers should be cautious when interpreting our results. Third, we only consider a small subset of accounting system principles. For example, we do not consider disclosure requirements. Fair value disclosures are a subset of an accounting systems' fair value orientation. Therefore, it is left to future research to improve the quality and extent of information about recognition, measurement and disclosure of accounting principles.

Appendix: LGAAP Survey

Subsections A1-A3

International Local GAAP Survey (LGAAP Survey)

You were selected to participate in this study because of your regional origin and your scholarly background in the area of financial accounting. We kindly ask you for your support. Since the quality of our response data is crucial for the success of our project, we will ask for some demographic information in order to identify your exposure to financial accounting issues. **All personal data will be kept strictly confidential.**

We know that time is a scarce resource. We worked hard to keep the survey as short and self-explanatory as possible. It should take no longer than 20 minutes to complete. We kindly ask you for your assessments about your home country's local GAAP. **In case of doubt, your home country should be the country for which you possess the highest level of institutional financial accounting knowledge.**

If you are not able to answer a question or if you think that a question is not applicable, then please indicate by marking "Can't say" in the following questions.

A: General Characteristics of Your Home Country's Locally-Developed Generally Accepted Accounting Principles (local GAAP)

A1: Please identify the country for which you will be answering this survey (your home country):

_____

		Yes	No
A2:	**Does your home country have local GAAP which differ from International Financial Reporting Standards (IFRS)?**	☐	☐

You only have to answer the following questions if your answer to question A2 is "Yes". If your answer to A2 is "No" you have completed the survey at this point.

A3: Please specify which set of GAAP (local GAAP (LGAAP) or IFRS) publicly listed and private non-financial firms have to apply preparing their individual (single legal entity) and group financial statements by putting the respective abbreviation in the respective cell of the table below. If a non-financial firm can apply both accounting regimes, please indicate this by putting "LGAAP/IFRS" in the respective cell.

	Individual statement	Group statement
Publicly listed non-financial firms		
Private non-financial firms		

If applicable: Usage of IFRS by publicly listed non-financial firms is required/possible since _____ .

If applicable: Usage of IFRS by private non-financial firms is required/possible since _____ .

The reminder of the survey focuses on the local GAAP of your home country. If in doubt, please base your answers on the version of the local GAAP which applies to publicly listed non-financial firms (or has applied to them prior to mandatory IFRS adoption).

Subsection A4

A4: Please give us your opinion about the following statements to describe the overall characteristics of your home country's local GAAP.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Can't say
Local GAAP are codified in governmental law.	☐	☐	☐	☐	☐	☐
Relevant local GAAP are developed by a private standard setter.	☐	☐	☐	☐	☐	☐
Central components of local GAAP are set out in abstract principles, which require professional interpretation and judgment.	☐	☐	☐	☐	☐	☐
Local GAAP are closely related to tax regulation.	☐	☐	☐	☐	☐	☐
Local GAAP offer less explicit guidance than IFRS.	☐	☐	☐	☐	☐	☐
Local GAAP offer more accounting choices than IFRS.	☐	☐	☐	☐	☐	☐
Local GAAP are efficiently enforced by governmental authorities.	☐	☐	☐	☐	☐	☐
Local GAAP are efficiently enforced by a private authority.	☐	☐	☐	☐	☐	☐
Statutory audits of financial reporting guarantee a high level of compliance with local GAAP.	☐	☐	☐	☐	☐	☐
Auditors have to follow the codified International Standards on Auditing (ISA).	☐	☐	☐	☐	☐	☐
Auditors are subject to efficient regulatory oversight.	☐	☐	☐	☐	☐	☐

B: Recognition and Measurement

In this section we ask you to characterize the main recognition and measurement principles of your home country's local GAAP for non-financial firms. In most financial accounting regimes the recognition of an asset or liability as well as its measurement are subject to specific criteria. If in doubt, please try to identify the answer that best summarizes the overall approach of your home country's local GAAP and assume that all general recognition and measurement criteria are met.

B1: Accounting Framework

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Can't say
Historical cost is the predominant measurement concept.	☐	☐	☐	☐	☐	☐
Mark-to-market is relevant when market values are below book values.	☐	☐	☐	☐	☐	☐
Mark-to-market is relevant when market values are above book values.	☐	☐	☐	☐	☐	☐
Mark-to-market is only used whenever market prices are observable.	☐	☐	☐	☐	☐	☐
Certain losses can be reflected directly in equity without affecting net income.	☐	☐	☐	☐	☐	☐
Certain gains can be reflected directly in equity without affecting net income.	☐	☐	☐	☐	☐	☐

B2: Intangible Assets

	Prohibited	Allowed	Mandatory	Can't say
The capitalization of research costs for internally generated intangible assets is	☐	☐	☐	☐
The capitalization of development costs for internally generated intangible assets is	☐	☐	☐	☐
If the market value of intangible assets (other than goodwill) is below their book value, measurement at market value is	☐	☐	☐	☐
If the market value of intangible assets (other than goodwill) exceeds their book value, measurement at market value is	☐	☐	☐	☐

B3: Goodwill

	Prohibited	Allowed	Mandatory	Can't say
The recognition of an internally generated goodwill is	☐	☐	☐	☐
The recognition of goodwill resulting from a business combination is	☐	☐	☐	☐
The subsequent measurement of goodwill using the amortization method is	☐	☐	☐	☐
The subsequent measurement of goodwill based on the impairment-only approach is	☐	☐	☐	☐

B4: Property, Plant and Equipment

	Prohibited	Allowed	Mandatory	Can't say
If the market value of property, plant and equipment is below their book value, measurement at market value is	☐	☐	☐	☐
If the market value of property, plant and equipment exceeds their book value, measurement at market value is	☐	☐	☐	☐

B5: Financial Assets

The measurement of financial assets usually depends on the different financial asset classifications. We assume that financial assets can be classified into assets that are held for trading purposes (trading securities), derivative securities and other financial assets.

	Prohibited	Allowed	Mandatory	Can't say
If the market value of *trading securities* is below their book value, measurement at market value is	☐	☐	☐	☐
If the market value of *trading securities* exceeds their book value, measurement at market value is	☐	☐	☐	☐
If the market value of *derivative securities* is below their book value, measurement at market value is	☐	☐	☐	☐
If the market value of *derivative securities* exceeds their book value, measurement at market value is	☐	☐	☐	☐
If the market value of *other financial assets* is below their book value, measurement at market value is	☐	☐	☐	☐
If the market value of *other financial assets* exceeds their book value, measurement at market value is	☐	☐	☐	☐

B6: Revenue Recognition

Revenues normally have to be recognized when goods are sold or services are rendered. In long-term contracts firms have to incorporate expenses while the contract is not completed. To mitigate this problem, in some financial accounting regimes revenues can be recognized following the percentage-of-completion method.

	Prohibited	Allowed	Mandatory	Can't say
The application of the percentage-of-completion method for (some) long-term contracts is	☐	☐	☐	☐

B7: Recognizing a provision for risk and charges generally requires a certain likelihood of materialization.

	Can't say
A provision is necessary if the likelihood of cash outflow exceeds _____ %.	☐

B8: Assume that a firm has identified a single present obligation of uncertain amount for which it has developed the following scenarios of possible future cash outflows. What amount should be recognized as a provision?

				Amount	Can't say
Probability:	30%	30%	40%	_____	☐
Cash outflow	10	20	50		
Probability:	45%		55%	_____	☐
Cash outflow	0		100		

C: General Information

Please tell us something about yourself. This information will help us to compare response behavior across survey participants.

C1: What characterizes best your current academic position?

Select one

Professor (tenured) ☐

Assistant professor/lecturer (untenured) ☐

Other teaching staff ☐

Doctoral student ☐

Other, please specify: _____

C2: How many years of teaching experience in the area of financial accounting do you have? _____

C3: In the past five years: Which of the following financial accounting courses did you teach?

Introduction to financial accounting ☐

Intermediate financial accounting ☐

Advanced financial accounting ☐

Financial statement analysis ☐

Auditing ☐

International accounting ☐

Other, please specify: _____

	Yes	No
C4: Have you collected financial accounting experience outside academia?	☐	☐

If yes, how many years of work experience do you have in the area of financial accounting outside academia? _____

C5: We might want to come back to you with questions about your questionnaire. Providing us with your email address would help us to significantly improve the data quality of this survey.

Your email address will be treated strictly confidential. Feel free not to give your contact information.

My email address is _____

Thank you very much for taking the time to participate in our survey. We greatly appreciate your effort. For questions or comments about this survey do not hesitate to contact us at: lgaap@wiwi.hu-berlin.de.

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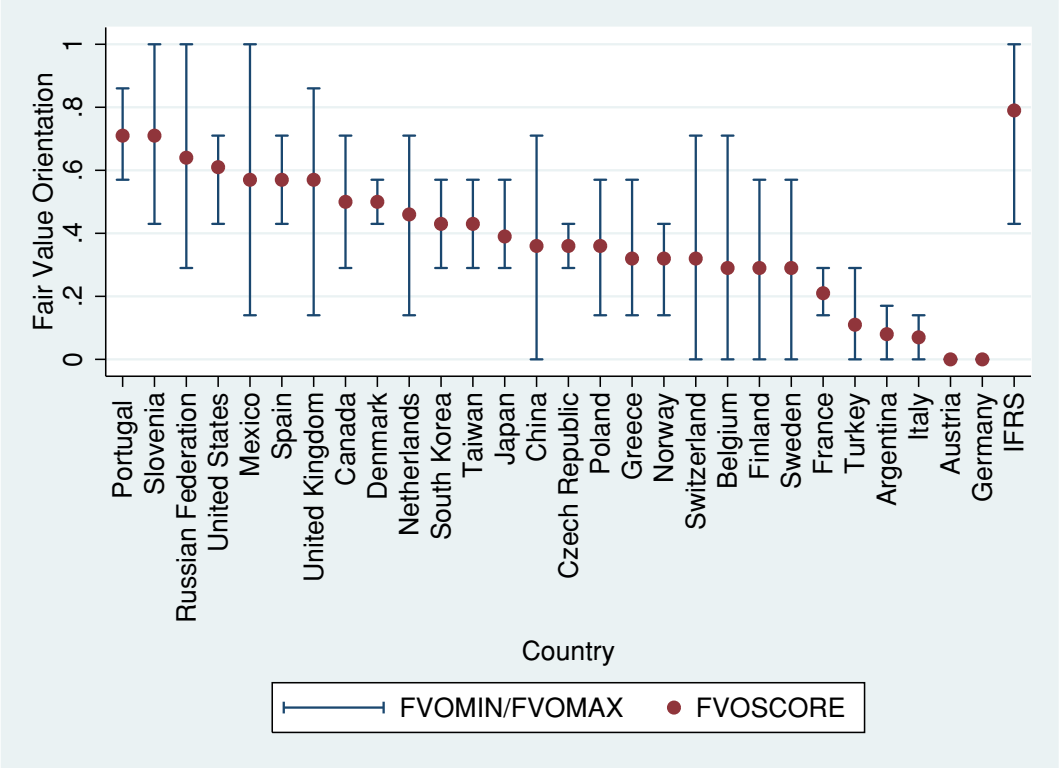
Figure 1: Fair Value Orientation by Country



Notes: $FVOSCORE$ is a based on the following seven principles: (1) revaluation of intangible assets to market value, (2) revaluation of PPE to market value, (3) subsequent measurement of trading securities at market value, (4) subsequent measurement of derivatives at market value, (5) subsequent measurement of other financial assets at market value, (6) impairment-only method for goodwill and (7) application of the PoC method. For every principle, we assign two points if the principle is mandatory and one point if the principle is allowed. The total of points across the seven principles normalized to one composes the FVO score ($FVOSCORE$). $FVOMAX$ is the maximum possible FVO and is calculated as follows: two points are scored if the principle is mandatory or allowed and zero points are scored if the principle is prohibited. $FVOMIN$ is the minimum possible FVO and is calculated as follows: two points are scored if the principle is mandatory and zero points are scored if the principle is allowed or prohibited. Similar to $FVOSCORE$, the summation of points is scaled to one and constitutes $FVOMAX$ and $FVOMIN$. Note that the exact score values are shown in Table 5.

Figure 2: Dendrogram of Average-Linkage

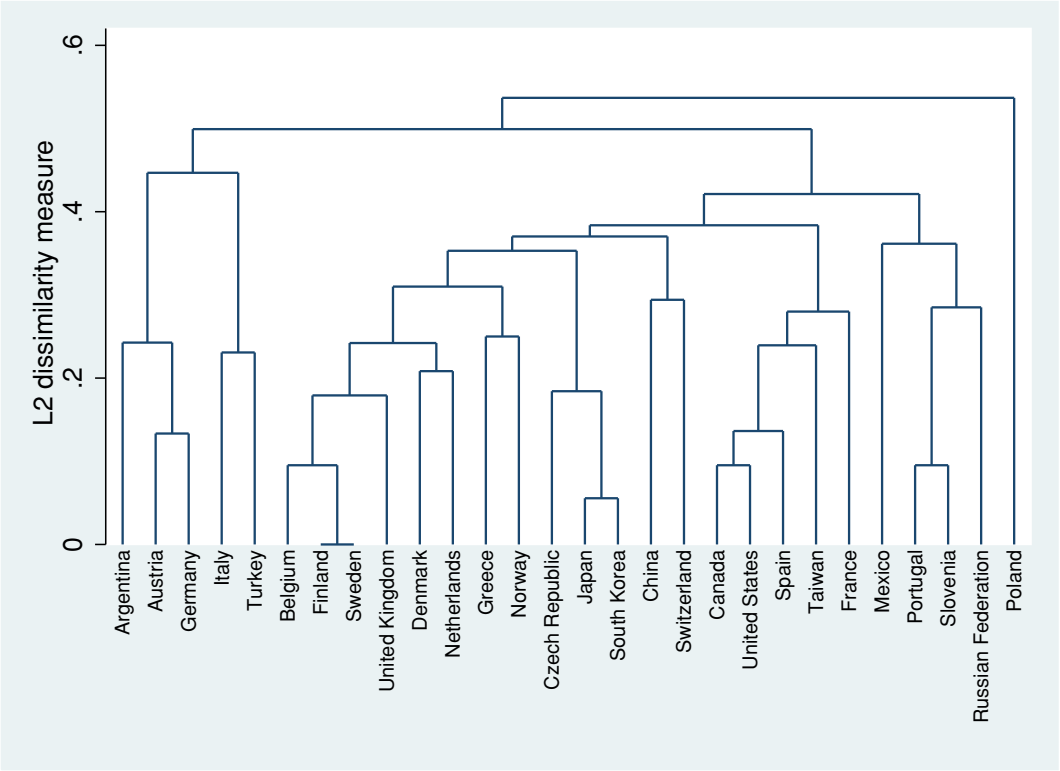


Figure 3: Multidimensional Scaling

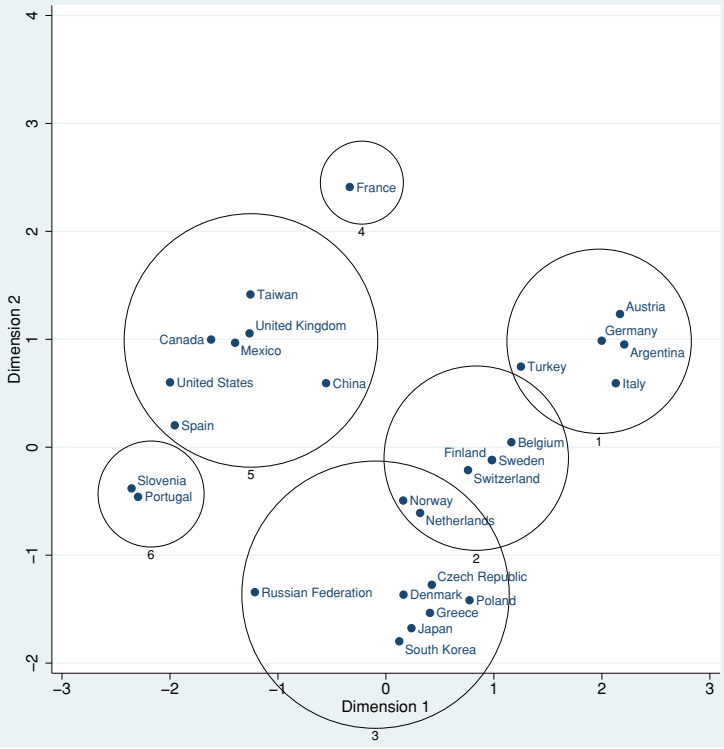


Table 1: Descriptive Statistics of the Response Sample

Panel A: Respondents' Personal Information

Academic Position	N	Perc
Professor (tenured)	72	52.55%
Lecturer/Assistant Professor	43	31.39%
Other Teaching Staff	7	5.11%
Doctoral student	7	5.11%
No Information	8	5.84%
Total	137	100.00%
Years of Teaching Experience	**N**	**Perc**
1-2	9	6.57%
3-5	19	13.87%
6-10	37	27.01%
> 10	60	43.80%
No Information	12	8.75%
Total	137	100.00%

Panel B: Respondents per Country

Country	N	Country	N
Argentina	3	Netherlands	4
Austria	6	Norway	5
Belgium	5	Poland	4
Canada	5	Portugal	8
China	5	Russia	5
Czech Republic	4	Slovenia	5
Denmark	3	South Korea	3
Finland	5	Spain	4
France	3	Sweden	5
Germany	12	Switzerland	4
Greece	5	Taiwan	3
Italy	8	Turkey	4
Japan	4	UK	5
Mexico	3	US	7

Notes: The response sample contains both fully and partially complete surveys. We also require the response sample to include countries with at least three responses. This yields a sample size of 137 responses from 28 countries. N is the number of responses.

Table 2: Local GAAP overall Institutional Characteristics

Country	Private		Publicly-listed		GOVLAW	PRISETTER	TAXLINK	GUIDANCE
	Individual Statement	Group Statement	Individual Statement	Group Statement				
Argentina	LGAAP	LGAAP	LGAAP	LGAAP	0	0	0	1
Austria	LGAAP	LGAAP/IFRS	LGAAP	IFRS	1	0	1	0
Belgium	LGAAP	LGAAP/IFRS	LGAAP	IFRS	1	0	1	0
Canada	LGAAP/IFRS	LGAAP/IFRS	IFRS	IFRS	1	1	0	1
China	LGAAP	LGAAP	LGAAP/IFRS	LGAAP/IFRS	1	0	1	1
Czech Republic	LGAAP	LGAAP/IFRS	IFRS	IFRS	1	0	1	1
Denmark	LGAAP/IFRS	LGAAP/IFRS	LGAAP/IFRS	IFRS	1	1	0	0
Finland	LGAAP/IFRS	LGAAP/IFRS	LGAAP/IFRS	IFRS	1	0	1	0
France	LGAAP	LGAAP/IFRS	LGAAP	IFRS	1	1	1	1
Germany	LGAAP	LGAAP/IFRS	LGAAP	IFRS	1	0	1	0
Greece	LGAAP/IFRS	LGAAP/IFRS	IFRS	IFRS	1	0	1	1
Italy	LGAAP/IFRS	LGAAP/IFRS	IFRS	IFRS	1	1	0	1
Japan	LGAAP	LGAAP	LGAAP	LGAAP/IFRS	1	1	0	1
Mexico	LGAAP	LGAAP	IFRS	IFRS	0	1	0	1
Netherlands	LGAAP/IFRS	LGAAP/IFRS	LGAAP/IFRS	IFRS	1	1	0	1
Norway	LGAAP/IFRS	LGAAP/IFRS	LGAAP/IFRS	IFRS	1	1	0	0
Poland	LGAAP	LGAAP	LGAAP/IFRS	IFRS	1	0	0	0
Portugal	LGAAP	LGAAP/IFRS	LGAAP/IFRS	IFRS	1	0	0	0
Russia	LGAAP	LGAAP	LGAAP/IFRS	LGAAP/IFRS	1	1	1	1
Slovenia	LGAAP/IFRS	LGAAP/IFRS	LGAAP/IFRS	IFRS	1	1	1	0
South Korea	LGAAP/IFRS	LGAAP/IFRS	IFRS	IFRS	1	1	1	1
Spain	LGAAP	LGAAP/IFRS	LGAAP	IFRS	1	0	1	0

Table 2: (continued)

Country	Private		Publicly-listed		GOVLAW	PRISETTER	TAXLINK	GUIDANCE
	Individual statement	Group statement	Individual statement	Group statement				
Sweden	LGAAP	LGAAP/IFRS	LGAAP	IFRS	0	0	1	1
Switzerland	LGAAP	LGAAP/IFRS	LGAAP	IFRS	0	1	0	0
Taiwan	LGAAP	LGAAP	LGAAP	LGAAP	0	1	0	1
Turkey	LGAAP/IFRS	LGAAP/IFRS	IFRS	IFRS	1	0	1	1
UK	LGAAP	LGAAP	IFRS	IFRS	0	1	0	1
US	LGAAP	LGAAP	LGAAP	LGAAP	0	1	0	1

Notes: This table presents results from responses to subsections A3 and A4 of the survey, which is presented in the appendix. The sample size is 137 responses from 28 countries. GOVLAW is an indicator variable that equals one if country-level median responses (strongly) agree with the statement 'local GAAP are codified in governmental law'. PRISETTER is an indicator variable that equals one if country-level median responses (strongly) agree with the statement 'relevant local GAAP are developed by a private standard setter'. TAXLINK is an indicator variable that equals one if country-level median responses (strongly) agree with the statement 'local GAAP are closely related to tax regulation'. GUIDANCE is an indicator variable that equals one if country-level responses (strongly) disagree with the statement 'local GAAP offer less explicit guidance than IFRS'.

Table 3: Local GAAP Accounting Framework

Country	Historical cost is the predominant measurement concept	Mark to market is only used when market prices are observable	Mark to market is relevant when market prices are below book values	Mark to market is is relevant when market prices are above book values	Certain losses are reflected directly in equity without affecting net income	Certain gains are reflected directly in equity without affecting net income
Argentina	2 (0.00)	4 (0.00)	4 (0.00)	3 (1.00)	2 (0.00)	2 (1.15)
Austria	5 (0.41)	4 (0.71)	4.5 (0.55)	2 (0.52)	2 (1.17)	2 (1.10)
Belgium	5 (0.55)	2.5 (0.58)	4 (0.45)	2 (0.84)	2.5 (0.96)	2.5 (1.29)
Canada	4 (0.55)	3.5 (1.41)	4.5 (0.58)	2 (0.50)	2.5 (2.06)	2.5 (2.06)
China	5 (0.55)	3 (0.89)	4 (1.26)	2.5 (0.96)	3 (0.84)	3 (0.84)
Czech Republic	5 (0.50)	3.5 (0.71)	4 (0.50)	2 (1.00)	4 (0.50)	4 (0.50)
Denmark	4 (1.00)	2 (1.15)	4 (0.58)	4 (0.58)	4 (1.15)	4 (0.58)
Finland	5 (0.00)	3 (0.89)	4 (0.45)	2 (0.84)	3 (1.15)	2 (1.00)
France	4 (0.58)	3 (1.41)	4 (1.53)	2 (0.58)	2 (1.53)	4 (1.15)
Germany	5 (0.49)	2.5 (1.00)	5 (0.89)	1 (0.67)	1 (0.51)	1 (0.51)
Greece	5 (0.45)	4 (1.52)	4 (0.45)	2 (0.84)	4 (1.14)	4 (1.14)
Italy	5 (0.35)	2 (0.83)	4 (0.83)	2 (0.53)	2.5 (0.93)	3 (0.99)
Japan	4 (1.15)	3.5 (1.29)	4 (0.50)	2.5 (0.96)	2 (1.73)	2 (1.73)
Mexico	2 (1.53)	5 (0.58)	3 (1.15)	3 (0.58)	4 (1.53)	2 (1.73)
Netherlands	4 (0.50)	2 (0.00)	4 (1.26)	3 (0.82)	4 (1.00)	4 (0.50)
Norway	5 (0.45)	3.5 (0.96)	4.5 (0.58)	3.5 (1.41)	4 (2.08)	3 (2.00)
Poland	4 (0.50)	3 (0.82)	4 (0.00)	4 (0.50)	4 (0.00)	4 (0.00)
Portugal	4 (0.99)	4 (1.07)	4 (0.49)	3 (0.49)	4 (0.00)	4 (0.35)
Russia	4 (0.71)	3 (1.22)	3 (1.14)	4 (1.14)	3 (1.83)	3 (1.83)
Slovenia	5 (1.64)	3 (1.52)	4 (1.10)	2 (0.55)	4 (1.64)	5 (0.55)
South Korea	3 (1.00)	4 (0.58)	4 (0.00)	3 (1.15)	4 (0.00)	4 (0.00)
Spain	4 (0.82)	3 (1.53)	4.5 (0.58)	2.5 (0.96)	4.5 (1.89)	4.5 (1.89)

Table 3: (continued)

Country	Historical cost is the predominant measurement concept	Mark to market is only used when market prices are observable	Mark to market is relevant when market prices are below book values	Mark to market is is relevant when market prices are above book values	Certain losses are reflected directly in equity without affecting net income	Certain gains are reflected directly in equity without affecting net income
Sweden	5 (0.55)	4 (1.41)	4.5 (0.58)	1 (0.45)	3 (1.22)	3 (1.22)
Switzerland	4.5 (0.58)	3 (0.58)	5 (0.00)	3 (1.53)	4 (1.73)	4 (1.50)
Taiwan	4 (1.15)	4 (1.15)	4 (0.58)	2 (1.00)	3 (0.00)	2.5 (0.71)
Turkey	5 (0.00)	4 (0.82)	5 (0.50)	2 (0.50)	4 (1.73)	4 (1.73)
UK	4 (0.45)	3 (0.89)	4 (0.84)	3 (0.89)	4 (1.41)	4 (0.84)
US	4 (1.07)	2 (0.69)	5 (0.49)	3 (1.50)	4 (1.41)	4.5 (1.55)
Median	4.27	3.25	4.16	2.54	3.29	3.27
Variance	0.71	0.58	0.24	0.63	0.84	1.01

Notes: This table presents results from responses to subsection B1 of the survey, which is presented in the appendix. The sample size is 137 responses from 28 countries. The variables are coded from one (strongly disagree) to five (strongly agree). Values in brackets are standard deviations of the country-level responses.

Table 4: Recognition and Measurement
Panel A: Intangibles

Country	Intangible Assets (1=prohibited 2=allowed 3=mandatory)							
	Recognition				Measurement			
	Research Expenditures		Development Expenditures		Impairment if BV > MV		Revaluation if BV < MV	
Argentina	2	(0.58)	2	(0.00)	3	(0.58)	1	(0.58)
Austria	1	(0.00)	1	(0.00)	3	(0.41)	1	(0.00)
Belgium	2	(0.71)	2	(0.00)	3	(0.55)	1	(0.00)
Canada	1	(0.00)	2	(0.45)	3	(1.10)	1	(0.00)
China	1	(0.45)	2	(0.45)	2	(1.00)	1	(0.50)
Czech Republic	1.5	(0.58)	2	(0.82)	2.5	(0.58)	1	(0.00)
Denmark	1	(0.00)	3	(0.58)	3	(0.00)	1	(0.00)
Finland	1	(0.00)	2	(0.45)	3	(0.58)	1	(0.00)
France	1	(0.00)	2	(0.58)	3	(0.00)	1	(0.58)
Germany	1	(0.29)	2	(0.00)	3	(0.29)	1	(0.00)
Greece	2	(0.58)	2	(0.00)	1	(1.15)	1	(0.00)
Italy	2	(0.71)	2	(0.53)	2	(0.89)	1	(0.00)
Japan	1	(0.50)	1	(0.58)	2.5	(0.71)	1	(0.00)
Mexico	1	(0.00)	2	(1.00)	3	(1.15)	2	(0.58)
Netherlands	1	(0.00)	3	(0.50)	3	(0.58)	1	(0.50)
Norway	2	(0.00)	2	(0.50)	3	(1.00)	1	(0.50)
Poland	1	(0.50)	1.5	(0.96)	1	(0.58)	1	(0.00)
Portugal	1	(0.00)	2	(0.53)	2	(0.49)	2	(0.38)
Russia	2	(0.55)	3	(0.55)	2	(0.50)	2	(0.55)
Slovenia	1	(0.45)	2	(0.45)	2	(0.58)	2	(0.84)
South Korea	1	(0.00)	2	(0.00)	2	(0.00)	1	(0.00)
Spain	2	(0.00)	2.5	(0.58)	3	(0.00)	1	(0.00)
Sweden	1	(0.45)	2	(0.55)	3	(0.89)	1	(0.55)
Switzerland	1	(0.00)	2	(0.00)	2.5	(0.58)	1	(0.00)
Taiwan	1	(0.00)	1	(0.00)	2	(0.58)	1	(0.58)
Turkey	2	(0.50)	1.5	(0.58)	2	(0.50)	1	(0.00)
UK	1	(0.45)	2	(0.00)	3	(0.00)	1	(0.58)
US	1	(0.00)	1	(0.38)	3	(0.76)	1	(0.00)
Median	1.30		1.95		2.52		1.14	
Variance	0.21		0.28		0.38		0.13	

Notes: This table presents results from responses to subsection B2 of the survey, which is presented in the appendix. The sample size is 137 responses from 28 countries. Based on the country-level responses, we record one point if the principle is prohibited, two points if the principle is allowed and three points if the principle is mandatory. Values in brackets are standard deviations of the country-level responses. 'BV' denotes book value and 'MV' denotes market value.

Table 4: (continued)
Panel B: Goodwill and Property, Plant and Equipment

Country	Goodwill (1=prohibited 2=allowed 3=mandatory)						PPE (1=prohibited 2=allowed 3=mandatory)			
	Recognition				Measurement					
	Internally generated Goodwill		Business Combination Goodwill		Amortization Method	Impairment-only Method	Impairment if BV > MV		Revaluation if BV < MV	
Argentina	1	(0.58)	2	(0.00)	2 (0.00)	no info	3	(0.58)	1	(0.00)
Austria	1	(0.41)	2	(0.52)	3 (0.41)	1 (0.41)	3	(0.41)	1	(0.00)
Belgium	1	(0.50)	3	(0.50)	3 (0.50)	1 (0.00)	3	(0.55)	1.5	(0.58)
Canada	1	(0.45)	3	(0.55)	1 (0.45)	3 (0.89)	3	(0.45)	1	(0.00)
China	1	(0.45)	2	(0.00)	1 (0.50)	2 (0.84)	2	(0.55)	1	(0.00)
Czech Republic	1	(0.00)	2.5	(0.58)	3 (0.00)	1 (1.00)	2.5	(0.58)	1	(0.00)
Denmark	1	(0.00)	3	(0.00)	3 (0.00)	1 (1.15)	3	(0.00)	2	(0.00)
Finland	1	(0.00)	3	(0.00)	3 (0.00)	1 (0.50)	3	(1.00)	1	(0.55)
France	1	(0.00)	3	(0.58)	1 (0.58)	3 (1.15)	3	(0.00)	1	(0.58)
Germany	1	(0.00)	3	(0.29)	3 (0.62)	1 (0.58)	3	(0.29)	1	(0.00)
Greece	1	(0.50)	3	(0.55)	2.5 (0.58)	1 (0.50)	1	(0.58)	1.5	(0.58)
Italy	1	(0.00)	2	(0.69)	3 (0.76)	1 (0.76)	3	(0.79)	1	(0.00)
Japan	1	(0.00)	3	(0.00)	3 (0.00)	1 (0.00)	1.5	(0.58)	1	(0.00)
Mexico	1.5	(0.71)	2	(0.00)	1 (0.00)	3 (0.00)	2	(1.00)	2	(0.58)
Netherlands	1	(0.00)	2	(0.00)	2.5 (0.58)	1 (0.50)	3	(0.00)	2	(0.00)
Norway	1	(0.55)	3	(0.89)	2 (0.55)	1 (1.15)	3	(1.10)	1	(0.45)
Poland	1	(0.00)	3	(0.00)	3 (0.00)	1 (0.50)	1	(1.15)	1	(0.00)
Portugal	1	(0.00)	3	(0.00)	1 (0.00)	3 (0.00)	2	(0.35)	2	(0.35)

Table 4: (continued)
Panel B: (continued)

Country	Goodwill (1=prohibited 2=allowed 3=mandatory)								PPE (1=prohibited 2=allowed 3=mandatory)			
	Recognition				Measurement							
	Internally generated Goodwill		Business Combination Goodwill		Amortization Method		Impairment-only Method		Impairment if BV > MV		Revaluation if BV < MV	
Russia	2	(0.55)	3	(0.55)	2	(0.55)	2	(0.00)	2	(0.45)	2	(0.50)
Slovenia	1	(0.00)	3	(0.45)	1	(0.89)	3	(0.89)	2	(0.45)	2	(0.45)
South Korea	1	(0.00)	3	(0.58)	3	(1.15)	1	(1.15)	2	(0.00)	1	(0.58)
Spain	1	(0.00)	3	(0.50)	1	(1.00)	3	(1.00)	3	(0.58)	1	(0.00)
Sweden	1	(0.00)	3	(0.00)	3	(0.45)	1	(0.45)	3	(0.89)	1	(0.55)
Switzerland	1	(0.00)	2	(0.50)	2.5	(0.96)	1	(0.58)	2.5	(0.58)	1.5	(0.58)
Taiwan	1	(0.00)	3	(0.58)	1	(1.15)	3	(0.58)	3	(0.58)	1	(0.00)
Turkey	1	(0.00)	2	(0.50)	2	(0.82)	1.5	(0.58)	1.5	(0.96)	1	(0.50)
UK	1	(0.00)	3	(0.55)	1.5	(0.96)	3	(0.50)	3	(0.45)	2	(0.45)
US	1	(0.38)	3	(0.53)	1	(0.38)	3	(0.38)	3	(0.79)	1	(0.00)
Median	1.05		2.70		2.11		1.70		2.50		1.30	
Variance	0.04		0.21		0.77		0.95		0.44		0.19	

Notes: This table presents results from responses to subsections B3 and B4 of the survey, which is presented in the appendix. The sample size is 137 responses from 28 countries. Based on the country-level responses, we record one point if the principle is prohibited, two points if the principle is allowed and three points if the principle is mandatory. Values in brackets are standard deviations of the country-level responses. 'BV' denotes book value, 'MV' denotes market value and 'PPE' denotes property, plant, and equipment.

Table 4: (continued)

Panel C: Financial Assets and Percentage of Completion Method

Country	Financial Assets (1=prohibited 2=allowed 3=mandatory)												PoC	
	Trading Securities				Derivatives				Other Financial Assets					
	Impairment if BV > MV		Revaluation if BV < MV		Impairment if BV > MV		Revaluation if BV < MV		Impairment if BV > MV		Revaluation if BV < MV			
Argentina	3	(0.58)	1	(0.58)	3	(0.00)	1	(0.00)	3	(0.58)	1	(0.58)	2	(0.00)
Austria	3	(0.00)	1	(0.00)	3	(0.00)	1	(0.00)	3	(0.00)	1	(0.00)	1	(0.55)
Belgium	3	(0.00)	1.5	(0.58)	3	(0.00)	2	(0.58)	3	(0.50)	2	(0.55)	2	(0.55)
Canada	3	(0.50)	2	(0.50)	3	(0.50)	3	(0.00)	3	(0.50)	2	(0.50)	2	(0.50)
China	3	(0.55)	2	(0.84)	3	(0.55)	2	(0.71)	3	(0.55)	2	(0.71)	2	(0.71)
Czech Republic	3	(0.00)	3	(0.00)	3	(0.00)	3	(0.00)	2.5	(0.58)	2	(0.82)	1	(0.00)
Denmark	3	(0.00)	3	(0.00)	3	(0.00)	3	(0.00)	3	(0.00)	1	(0.00)	3	(0.00)
Finland	3	(0.45)	2	(0.82)	3	(0.45)	2	(0.50)	3	(0.45)	2	(0.50)	2	(0.00)
France	3	(0.00)	1	(0.00)	3	(0.00)	1	(0.00)	3	(0.00)	1	(0.00)	2	(0.00)
Germany	3	(0.00)	1	(0.62)	3	(0.00)	1	(0.30)	3	(0.47)	1	(0.29)	1	(0.00)
Greece	3	(0.00)	2	(1.00)	3	(0.00)	3	(0.00)	3	(0.00)	1	(0.00)	2	(0.00)
Italy	2	(0.69)	1	(0.38)	1.5	(0.55)	1	(0.00)	2	(0.76)	1	(0.00)	2	(0.38)
Japan	3	(0.00)	3	(0.50)	3	(0.00)	3	(0.50)	2	(0.82)	1.5	(0.96)	2	(0.00)
Mexico	2	(0.58)	2	(0.58)	2	(0.58)	2	(0.58)	2	(1.00)	2	(1.00)	2	(0.00)
Netherlands	3	(0.00)	3	(0.00)	3	(0.00)	2	(0.58)	3	(0.50)	2	(0.00)	2.5	(0.58)
Norway	3	(0.50)	2.5	(0.58)	3	(0.00)	3	(0.00)	2.5	(0.58)	1	(0.00)	2	(0.55)
Poland	2	(0.50)	2	(0.50)	2	(0.50)	2	(0.50)	2	(0.00)	2	(0.00)	3	(0.50)
Portugal	3	(0.49)	3	(0.49)	3	(0.41)	3	(0.41)	2	(0.50)	1	(0.50)	3	(0.00)
Russia	3	(0.58)	3	(0.58)	2.5	(0.71)	3	(0.00)	2	(1.00)	2	(1.00)	2	(0.71)

Table 4: (continued)
Panel C: (continued)

Country	Financial Assets (1=prohibited 2=allowed 3=mandatory)												PoC	
	Trading Securities				Derivatives				Other Financial Assets					
	Impairment if BV > MV		Revaluation if BV < MV		Impairment if BV > MV		Revaluation if BV < MV		Impairment if BV > MV		Revaluation if BV < MV			
Slovenia	3	(0.00)	3	(0.55)	3	(0.00)	3	(0.55)	2	(0.55)	2	(0.00)	2	(0.00)
South Korea	3	(0.58)	3	(0.58)	3	(0.58)	3	(0.58)	2	(0.58)	2	(0.58)	2	(0.00)
Spain	3	(0.50)	3	(0.50)	3	(0.00)	3	(0.00)	2	(0.00)	2	(0.00)	2	(0.58)
Sweden	3	(0.00)	2	(0.58)	3	(0.50)	2	(0.58)	3	(0.00)	2	(0.58)	2	(0.00)
Switzerland	2.5	(0.58)	2	(0.00)	3	(0.58)	2	(0.58)	2.5	(0.58)	2	(0.58)	2	(0.50)
Taiwan	3	(0.58)	1	(1.15)	2.5	(0.71)	3	(0.00)	3	(0.58)	2	(1.41)	2	(0.58)
Turkey	2	(0.00)	1	(0.00)	2	(0.00)	1	(0.00)	2	(0.00)	1	(0.00)	2	(1.00)
UK	3	(0.00)	2	(0.58)	3	(0.00)	2	(0.58)	3	(0.00)	2.5	(0.71)	2.5	(0.58)
US	3	(0.00)	3	(0.49)	3	(0.00)	3	(0.52)	3	(0.52)	2.5	(0.82)	2	(0.38)
Median	2.84		2.11		2.80		2.25		2.59		1.66		2.04	
Variance	0.13		0.64		0.17		0.64		0.22		0.28		0.24	

Notes: This table presents results from responses to subsections B5 and B6 of the survey, which is presented in the appendix. The sample size is 137 responses from 28 countries. Based on the country-level responses, we record one point if the principle is prohibited, two points if the principle is allowed and three points if the principle is mandatory. Values in brackets are standard deviations of the country-level responses. 'BV' denotes book value, 'MV' denotes market value and 'PoC' denotes percentage of completion.

Table 5: Fair Value Orientation of Local GAAP

Country	*FVOSCORE*		*FVOMAX*		*FVOMIN*	
Portugal	0.71	(1)	0.86	(4)	0.57	(1)
Slovenia	0.71	(1)	1.00	(1)	0.43	(2)
Russia	0.64	(3)	1.00	(1)	0.29	(6)
US	0.61	(4)	0.71	(6)	0.43	(2)
Mexico	0.57	(5)	1.00	(1)	0.14	(12)
Spain	0.57	(5)	0.71	(6)	0.43	(2)
UK	0.57	(5)	0.86	(4)	0.14	(12)
Canada	0.50	(8)	0.71	(6)	0.29	(6)
Denmark	0.50	(8)	0.57	(13)	0.43	(2)
Netherlands	0.46	(10)	0.71	(6)	0.14	(12)
South Korea	0.43	(11)	0.57	(13)	0.29	(6)
Taiwan	0.43	(11)	0.57	(13)	0.29	(6)
Japan	0.39	(13)	0.57	(13)	0.29	(6)
China	0.36	(14)	0.71	(6)	0.00	(19)
Czech Republic	0.36	(14)	0.43	(21)	0.29	(6)
Poland	0.36	(14)	0.57	(13)	0.14	(12)
Greece	0.32	(17)	0.57	(13)	0.14	(12)
Norway	0.32	(17)	0.43	(21)	0.14	(12)
Switzerland	0.32	(17)	0.71	(6)	0.00	(19)
Belgium	0.29	(20)	0.71	(6)	0.00	(19)
Finland	0.29	(20)	0.57	(13)	0.00	(19)
Sweden	0.29	(20)	0.57	(13)	0.00	(19)
France	0.21	(23)	0.29	(23)	0.14	(12)
Turkey	0.11	(24)	0.29	(23)	0.00	(19)
Argentina	0.08	(25)	0.17	(25)	0.00	(19)
Italy	0.07	(26)	0.14	(26)	0.00	(19)
Austria	0.00	(27)	0.00	(27)	0.00	(19)
Germany	0.00	(27)	0.00	(27)	0.00	(19)
IFRS	0.79		1.00		0.43	

Notes: *FVOSCORE* is a based on the following seven principles: (1) revaluation of intangible assets to market value, (2) revaluation of PPE to market value, (3) subsequent measurement of trading securities at market value, (4) subsequent measurement of derivatives at market value, (5) subsequent measurement of other financial assets at market value, (6) impairment-only method for goodwill and (7) application of the PoC method. For every principle, we assign two points if the principle is mandatory and one point if the principle is allowed. The total of points across the seven principles normalized to one composes the FVO score (*FVOSCORE*). *FVOMAX* is the maximum possible FVO and is calculated as follows: two points are scored if the principle is mandatory or allowed and zero points are scored if the principle is prohibited. *FVOMIN* is the minimum possible FVO and is calculated as follows: two points are scored if the principle is mandatory and zero points are scored if the principle is allowed or prohibited. Similar to *FVOSCORE*, the summation of points is scaled to one and constitutes *FVOMAX* and *FVOMIN*. The results of this table are also shown in Figure 1.

Table 6: Spearman Correlation with GAAP Difference Measures

	FVOSCORE	Street (2002)	Bae et al. (2008)	Ding et al. (2007): Divergence
FVOSCORE	1			
Street (2002)	-0.24 (0.22) N=28	1		
Bae et al. (2008)	-0.30 (0.12) N=28	0.78 (0.00) N=28	1	
Ding et al. (2007): Divergence	-0.21 (0.01) N=18	0.65 (0.00) N=24	0.58 (0.00) N=24	1

Notes: Street (2002) summarizes the 'GAAP 2001' survey and ranks countries based on the number of total differences. Bae et al. (2008) assesses how local GAAP systems differ to IAS on 21 key accounting items. Ding et al. (2007): Divergence covers whether a transaction is treated differently in IAS and local GAAP. All three measures are based on the 'GAAP 2001' survey results.

Financial Accounting Regime Choice when Objectives Compete

Joachim Gassen and Timo Eisenschink

Abstract: This paper investigates the determinants of financial accounting regime choice in a setting with competing financial accounting objectives. We model the regime choice of a risk-neutral entrepreneur who needs financial accounting information for contracting with a managerial agent and for communicating the firm value to a risk-averse secondary capital market. Our comparative static results indicate that the preference of the entrepreneur for a fair value accounting regime increases with the relative importance of the secondary capital market and the outside options of the managerial agent, while it decreases with the overall quality of the accounting signal, the effectiveness of the enforcement process and managerial productivity. Our empirical evidence, which is based on country-year level, country-level and US time series analysis, provides support for most of the theoretical predictions.

Keywords: Financial Accounting, Contracting, Valuation, Fair Value, Historical Cost

1 Introduction

Financial reporting requires a financial accounting regime. The development of such a regime is the main purpose of financial accounting standard setters around the globe. As one of the consequences of the 2007/2008 financial crisis, financial accounting regime choice attracted wide-spread attention since several discussants suspected the fair value financial accounting regime to be one of the building blocks of the crisis (Ryan, 2008; Laux and Leuz, 2009).

Selecting a financial accounting regime requires balancing the advantages and disadvantages of competing alternatives. These pros and cons vary with the usage of financial accounting information in different contractual settings. Thus, financial accounting regimes are typically designed and evaluated with a certain financial accounting objective in mind. Such an objective could be to provide capital market participants with information for valuing their stakes. An alternative objective could be to provide owners of a company with information that they can use as a contractual component in typical firm contracts like, for example, debt and managerial compensation contracts. In theory, these alternative objectives cause different accounting regimes to be efficient (Gjesdal, 1981; Paul, 1992). In addition, financial accounting regime choice is an evolutionary process. Also, since financial accounting regimes are regulated, different financial accounting objectives affect the regulation at the jurisdictional-level. Thus, financial accounting regime choice can be expected to be simultaneously determined by competing objectives in reality.

This is why in this paper we investigate determinants of financial accounting regime choice in a setting where financial accounting objectives compete. Doing so, we strive to understand the observable cross-country variance of financial accounting regimes. A substantial body of the comparative international accounting literature is based on the (mostly implicit) assumption that a financial accounting regime exists which, if followed by firms and au-

ditors, provides market participants with 'high quality' financial accounting information. Firms and countries whose financial accounting information (and regimes) differ from that 'high quality prototype' are assumed to be providing an inefficient 'low quality' information environment (Francis et al., 2004; Dechow, Ge and Schrand, 2010). We question this view by investigating whether the observed variance in financial accounting regimes and financial accounting outcomes worldwide could instead be an efficient response to the relative and varying importance of competing financial accounting objectives across countries.

To achieve this objective, we develop a simple three-period model that can be seen as an extension to the model of Goldman and Slezak (2006). It investigates the usage of accounting information in a share-based compensation setting where a manager has the possibility to manipulate a financial report. While Goldman and Slezak (2006) focus on this management compensation problem, we extend their setting by introducing a competing valuation objective. Like Goldman and Slezak (2006), we model capital-market participants as being risk-averse. The entrepreneur, who is risk-neutral, has a consumption-driven incentive to sell a part of his investment to the capital market in the interim period. Thus, he benefits from better-informed market participants because they will on average be offering a higher price for the share.

In the first period, the entrepreneur has the option to choose between two accounting regimes. The first accounting regime, which we label as historical cost (HC), reports only internally-generated effects on firm value while the second (fair value, FV) reports in addition exogenous effects on firm value, such

as, for example, market price changes.[1] Both reports are noisy and by definition, managerial productivity affects the internal components of firm value but not the exogenous components. The entrepreneur also designs a linear stock-based compensation contract. The manager then decides upon the offered contract (consisting of the compensation contract and the chosen accounting regime), determines her effort level and exerts effort and decides on a costly manipulation (which affects her own utility but not the value of the firm).

At the beginning of the second period, the manager learns the noisy information from the accounting system and issues a financial report to the public. Capital market participants are modeled to be rational but risk-averse. So, they are able to predict the equilibrium amount of manipulation and their willingness to pay is negatively-related to the expected variance of the terminal firm value conditional on their information. As the fair value accounting regime provides them with more detailed information about the terminal value of the firm, the stock price of period two, as expected in period one, is on average higher when the fair value accounting regime is being used. This generates an incentive in period one for the entrepreneur to choose the fair value accounting regime, while in general, the historical accounting regime allows more efficient risk sharing between the risk-neutral entrepreneur and the risk-averse manager. The manager is compensated based on the observed stock price in period two and the entrepreneur sells a fraction of his firm to smooth consumption. In the final period, which is too far in the future to allow contracting upon its outcomes, the terminal firm value of the firm is realized and the entrepreneur liquidates his remaining shares of the firm.

[1] It seems important to note that these two accounting regimes are highly stylized versions of the multi-faceted designs of real-life financial accounting regimes. For example, a very common accounting approach is the so-called 'lower of cost or market principle'. These asymmetric regimes generally cause kinky (and thus non-fully differentiable) utility functions conditional on ex post information arrival. We decide to use highly stylized accounting regimes for the analysis as this allows us to keep the model and the succeeding empirical analysis traceable.

Based on this set-up the results show that, in equilibrium, the entrepreneur is more likely to choose the fair value accounting regime when his preference for consumption smoothing or the risk-averseness of capital market participants increases. Also, he is more inclined to choose the fair value regime when the potential productivity of the manager decreases or the disutility of the manager increases. In the latter two cases, incentivizing the manager becomes relatively more costly (disutility argument) or less relevant (productivity argument) and this is why the relative benefit of informing market participants about firm value becomes more important. Finally, we find that as accounting becomes noisier and easier to manipulate, the fair value regime becomes more attractive for the entrepreneur. The intuition for this finding is a little bit less obvious. First, accounting noise makes stock prices more volatile and this worsens the risk sharing between manager and entrepreneur based on the stock-based compensation contract, making the valuation objective relatively more attractive. Second, if accounting becomes easier to manipulate, the manager will manipulate more in equilibrium. Ultimately, the entrepreneur has to compensate her for this utility loss. In order to reduce this deadweight loss, it is rational for the entrepreneur to put less weight on the compensation contract and more weight on the capital market information role of accounting.

We continue by testing these theoretical predictions empirically. As financial accounting regime decisions are done at the regulatory level over time, we need to develop a country-level measure of the chosen financial accounting regime and then study its determinants. Since no undisputed measure of financial accounting regime choice exists in the literature, we develop a research design which uses four different measures of fair value orientation to triangulate the robustness of the findings.

The first measure of fair value orientation is based on firm-year level accounting choices and thus can be characterized as an output-oriented measure.

It is the first principle component of the following constructs: (a) the absolute residual of country-year level value relevance regressions, (b) the absolute residual of country-year level regressions of positive returns on earnings, (c) the absolute residual of country-year level regressions measuring the relation between market and book values, (d) the number of analysts following a firm and (e) the delay between fiscal year end and the annual financial statement disclosure date. We are able to estimate our constructs for a broad sample of 40,460 firm-year observations covering 40 countries, generating a total of 495 country-year observations.

Our second and third measures are input-oriented and assess the financial accounting regulation at the jurisdictional (country-) level. For the second measure we use practitioner publications and additional accounting literature to rank financial accounting regimes by their fair value orientation. Because of limited data availability, we are able to calculate this measure only for 18 out of our 40 countries. This is why we rely on a survey conducted with accounting academics around the globe to assess the fair value orientation of financial accounting regimes for a broader sample of 25 out of our 40 countries (Eisenschink, 2013).

While our output-oriented first measure is calculated at the country-year level, the input-oriented second and third measures are constructed at the country-level and thus exhibit no variance over time. To address this limitation of our input-oriented measures, we use standards published by the Financial Accounting Standards Board (FASB) over the time period 1979 to 2009 and a linguistic approach to generate a time series measure of the fair value orientation of US Generally Accepted Accounting Principals (GAAP). The resulting fourth measure documents an increasing fair value orientation of US GAAP over time.

We acknowledge that each single fair value orientation measure likely exhibits significant measurement error. However, all of our constructs are significantly positively correlated. We posit that, while they are likely to capture different aspects of fair value orientation, our combined constructs provide comprehensive and robust measures which can be used to test the predictions of our theoretical model.

We conceptualize our theoretical predictions by investigating the impacts of four distinct determinants on fair value orientation: (a) the relative importance of capital markets, (b) the cost of top-level management incentivization, (c) the potential productivity of management and (d) the effectiveness of the enforcement infrastructure. In line with our theoretical findings, we expect (a), (b) and (d) to be positively related with the fair value orientation of the respective financial accounting regime, while we assume (c) to be negatively related.

Our findings indicate a robust positive relation between the relative importance of equity markets and the fair value orientation of the financial accounting regimes and a robust negative relation between the potential management productivity and fair value orientation. We find weaker support for the positive relation of opportunity cost of top-level management with the fair value orientation. We find no unambiguous support for the effect of the enforcement infrastructure on fair value orientation.

Our study makes four distinct contributes to the literature. First, our paper adds to the theoretical literature that investigates the interplay between accounting objectives and financial accounting regimes (e.g. Beaver and Demski, 1979; Gjesdal, 1981; Liang, 2000; Lambert, 2001; Liang, 2001; Christensen and Demski, 2003; Arya et al., 2004; Christensen, Feltham and Sabac, 2005; Drymiotes and Hemmer, 2013). We extend this literature by explicitly modeling a financial accounting regime choice in a setting with competing

objectives. Second, we contribute to studies analyzing incentives for effects of earnings management in mandatory reporting settings with partially verifiable information and rational expectations (Fischer and Verrecchia, 2000; Goldman and Slezak, 2006; Guttman, Kadan and Kandel, 2006; Laux and Laux, 2009; Beyer et al., 2010 for a general overview) by investigating the effects of competing objectives and the strategic interaction of accounting standard setting, managerial behavior and rational capital market participants.

Third, we extend the empirical accounting literature which studies the determinants of accounting regime choice both within and across countries (Ball, Kothari and Robin, 2000; Ball, Robin and Wu, 2003; Leuz, Nanda and Wysocki, 2003; Ding et al., 2007; Muller, Riedl and Sellhorn, 2011; Christensen and Nikolaev, 2013). While this literature tends to focus on country-level and firm-level determinants of firm-level accounting choices within existing financial accounting regimes our focus is on the determinants of the financial accounting regime choice itself. In that respect, our study complements recent research that uses political economy arguments to explain financial accounting regime choices (Allen and Ramanna, 2013; Bertomeu and Cheynel, 2013) by proposing an efficient contracting explanation for the cross-jurisdictional variance in financial accounting regimes. Fourth, we develop an innovative output-oriented measure of fair value orientation at the firm-level and two input-oriented measures of the fair value orientation and a time series measure of the fair value orientation of US GAAP.

This paper continues as follows: The second section provides the theoretical model. The third section presents the empirical test design, the data and the results. The fourth section concludes.

2 Model

2.1 Basic Set-up

Our principal agent model is based on Goldman and Slezak (2006) and encompasses three periods in a zero interest world. In the first period t_0 a risk-neutral entrepreneur owns an asset (for example a patent to produce an innovate product) and sets up a single asset firm. Since the entrepreneur is unable to run the firm he has to hire a risk-averse manager. Before he hires the manager the entrepreneur selects a financial accounting regime AR and then offers a linear stock price based compensation contract $(\omega_0,\ \omega_1)$ to the manager. While the manager does not know the terminal asset value (henceforth terminal firm value), she decides upon acceptance of the contract, her unobservable effort level, which is denoted by e and the level of manipulation she will exert over the accounting report, which is denoted by α. The terminal firm value materializes in the third period and is based on cash flows from operating the asset. The cash flows depend on managerial effort, an exogenous productivity factor, production noise and the market success of the asset (henceforth market risk). The production noise and the market risk are additive and exogenous to the actions of the manager:

$$V = \beta e + \mu + \eta, \tag{1}$$

where V is terminal firm value, $\beta > 0$ is the productivity factor, $\mu \sim N(0, \sigma_\mu^2)$ is production noise and $\eta \sim N(0, \sigma_\eta^2)$ is the market risk of the asset. The parameter β and the distribution of μ and η are public information.

In the second period t_1 the manager privately receives the noisy accounting report θ_{AR}^T and publicly releases the manipulated accounting report θ_{AR} that is used by risk-averse investors (capital market participants) to determine the stock price, labeled as S. The entrepreneur trades a part c of his wealth to smooth consumption and additionally the manager is compensated based on

the contract that is linked to the stock price: $\mathrm{W} = \omega_0 + \omega_1 \mathrm{S}$. In the last period t_2, which is too far to be useful for contracting, the firm is terminated and the entrepreneur receives $(1 - c)$ of the terminal firm value.

The entrepreneur is risk-neutral but has a preference for consumption smoothing, which is denoted by c. This assumption is useful in order to generate a demand for informative stock prices, as the entrepreneur benefits from efficient stock prices for consumption smoothing purposes. Otherwise if we relax the consumption smoothing assumption, the entrepreneur will only care about efficient contracting with the manager and would choose the accounting regime which is optimal to induce high managerial effort. The entrepreneurs' utility function is:

$$U^E\left(V, S \mid \theta_{AR}\right) = (1 - c)(V - W) + c\, S \tag{2}$$

where $V - W$ is the net pay-off in t_2, c is the entrepreneurs' preference for consumption smoothing and S is the stock price in t_1.

In our model the accounting regime AR is used to solve moral hazard problems with the risk-averse manager who has to run the firm (to provide efficient contracting) and to reduce information asymmetries between the manager and an exogenous risk-averse capital market (to provide efficient stock pricing). We assume that the entrepreneur can choose in t_0 between two alternative accounting regimes, both offering a noisy accounting signal:

$$HC : \theta_{HC}^T = \beta e + \mu + \lambda \qquad \text{(historical cost)} \tag{3}$$

$$FV : \theta_{FV}^T = \beta e + \mu + \eta + \lambda \qquad \text{(fair value)} \tag{4}$$

We model θ_{HC}^T by a noisy signal of the productivity adjusted effort (labour input) and production noise, where λ is accounting noise that is $N(0, \sigma_\lambda^2)$ distributed. θ_{FV}^T also incorporates the market sucess of the asset. Hence, the

two accounting regimes differ in the way they recognize market risk. The manager has discretion over the accounting report and releases the noisy and manipulated accounting report $\theta_{AR} = \theta_{AR}^{T} + \alpha$.

The manager has a LEN-utility function $U^M(W, e, \alpha) = -exp\left[-\gamma\left(W - K(e) - M(\alpha)\right)\right]$, where γ represents the risk aversion coefficient and $K(e) = \frac{\delta}{2}e^2$ represents the disutility of effort and $M(\alpha) = \frac{\xi}{2}$ represents the cost of manipulating the accounting report (Fischer and Verrecchia, 2000).[2] The managers' reservation level of utility is zero and thus the managers' t_0 objective function has the following form:

$$E_0\left[U^M\left(W, e, \alpha\right) \mid AR\right] = E_0\left[W \mid AR\right] - \frac{\gamma}{2} Var\left[W \mid AR\right] - \frac{\delta}{2}e^2 - \frac{\xi}{2}\alpha^2 \tag{5}$$

2.2 Stock Price, Optimal Effort and Manipulation

In our model managerial compensation is based on the second period stock price. To solve for the optimal amount of effort and manipulation, we first have to determine the stock price. Doing so, we use a (simple) capital market where shares are traded. We assume that each investor in the capital market forms rational expectations in t_1 about the terminal firm value conditional on the accounting report:

$$\begin{aligned} E_1^I\left[V \mid \theta_{AR}\right] &= \theta_{AR} - \alpha^e - E_1^I[\lambda] \\ &= \beta\hat{e} + E_1^I\left[\mu + \eta + \lambda \mid \theta_{AR}\right] + (\hat{\alpha} - \alpha^e) - E_1^I[\lambda] \end{aligned} \tag{6}$$

[2] The LEN assumptions are very restrictive about linear compensation contracts and normally distributed performance measures (Hemmer, 2004, Armstrong, Guay and Weber, 2010). Relaxing the LEN framework and, for example, using a general (nonlinear) compensation contract would lead to a cumbersome analysis that would likely not yield any testable hypotheses.

Because investors are rational and know all public information they can perfectly predict the equilibrium amount of effort and manipulation. Thus, in equilibrium, manipulation does not have an impact on the stock price ($\hat{\alpha} - \alpha^e = 0$). However, because the investors cannot directly infer the amount of production noise, market risk and accounting noise, they have to form rational expectations:

$$E_1^I \left[\mu + \eta + \lambda \,|\, \theta_{HC}\right] = \mu + \lambda \tag{7}$$

$$E_1^I \left[\mu + \eta + \lambda \,|\, \theta_{FV}\right] = \mu + \eta + \lambda \tag{8}$$

Since accounting noise distorts the signal of the terminal firm value, investors correct the signal with $E_1^I[\lambda]$. We assume that each investor has a negative exponential utility function. According to Verrecchia (2001) in a perfect competition setting when each investor maximizes her expected wealth, the demand of a risk-averse investor i for a risky asset is a function of the risk-adjusted (r is the risk aversion of the investors) expectation of the residual firm value minus the stock price:

$$D^i = \frac{E_1^I \left[V - W \,|\, \theta_{AR}\right] - S}{r \; Var \left[V \,|\, \theta_{AR}\right]} \tag{9}$$

In equilibrium, the supply equals the demand and thus the market clearing condition $\sum_{i=1}^{N} D^i = N\bar{D}$ holds. Now we can endogenize the stock price S, which can be written in the form:

$$\begin{aligned} S = & \frac{1}{1+\omega_1} \left(\beta \hat{e} + E_1^I[\mu + \eta + \lambda \,|\, \theta_{AR}] + (\hat{\alpha} - \alpha^e) - \omega_0 \right. \\ & \left. - r\bar{D} Var \left[V \,|\, \theta_{AR}\right]\right) \end{aligned} \tag{10}$$

In line with market participants being risk-averse, higher risk lowers the stock price. In the model, we capture risk by the conditional variance of the terminal firm value. Because the historical cost accounting regime reveals less

information about the terminal firm value than the fair value accounting regime, the risk premium is higher. This can be illustrated be the inequality: $Var\left[V \mid \theta_{HC}\right] = \sigma_{\eta}^2 + \sigma_{\lambda}^2 > Var\left[V \mid \theta_{FV}\right] = \sigma_{\lambda}^2$. Note that because of accounting noise, the investors cannot perfectly predict the terminal firm value even under the fair value accounting regime.

After determining the stock price, we can solve the optimal amount of effort and manipulation maximizing managers' utility function. We obtain the equilibrium amount of effort and manipulation after substituting the expected stock price and the variance of the stock price in (5) and taking the first order condition with respect to e and α.

Lemma 1 *The equilibrium amount of effort and manipulation are characterized as follows:*

$$\hat{e} = \frac{\hat{\omega}}{\delta}\beta \tag{11}$$

$$\hat{\alpha} = \frac{\hat{\omega}}{\xi} \tag{12}$$

$$where \quad \hat{\omega} \equiv \frac{\hat{\omega}_1}{1 + \hat{\omega}_1} \tag{13}$$

Proof. *See appendix.*

For $\hat{e}$ we obtain the same result as Goldman and Slezak (2006). The optimal amount of effort will increase if the productivity and the pay-for-performance sensitivity increases and will decrease if inducing high effort becomes more costly. On the other hand, the linear compensation contract incentivizes the manager to manipulate the accounting report. However, increasing the disutility of manipulation ξ will lower the equilibrium amount of manipulation. Please note that risk and the accounting regime have no direct impact on the equilibrium amount of effort and manipulation. However, they

are involved in the compensation contract optimization problem and thus will indirectly influence $\hat{e}$ and $\hat{\alpha}$.

2.3 Optimal Compensation Contract and Accounting Regime Choice

Since the model is solved by backward induction, we first have to determine the optimal compensation contract for each financial accounting regime and afterwards identify the optimal financial accounting regime choice. An optimal compensation contract solves the following problem:

$$\begin{aligned}
&\max_{\hat{\omega}_0,\,\hat{\omega}_1} \quad E_0\left[U^E\left(V,S\right)\,\middle|\,AR\right] \\
&\text{subject to } E_0\left[U^M\left(W\right)\,\middle|\,AR\right] \geq 0 \\
&\text{and } \arg\max_{e,\alpha}\; U^M(W,e,\alpha)
\end{aligned}$$

Lemma 2 *The entrepreneur designs the compensation contract which maximizes his expected wealth by obeying the managers' participation and incentive constraints:*

$$\hat{\omega}_1(HC) = \frac{\beta^2\xi}{\delta\left(1+\gamma\xi(\sigma_\mu^2+\sigma_\lambda^2)\right)} \tag{14}$$

$$\hat{\omega}_1(FV) = \frac{\beta^2\xi}{\delta\left(1+\gamma\xi(\sigma_\mu^2+\sigma_\eta^2+\sigma_\lambda^2)\right)} \tag{15}$$

Proof. *See appendix.*

The entrepreneur can choose between the historical cost and the fair value financial accounting regime. If he chooses historical cost he can induce higher effort and thus increase the terminal firm value. But, historical cost leads to more opaque stock prices and thus to a lower interim stock price on average. On the other hand, fair value accounting makes stock prices more transparent, because all (private) information will be priced. But proving more information will also lead to a more volatile stock price and thus the manager will demand a

higher risk premium for her compensation uncertainty. Since the entrepreneur is concerned with optimal motivation of the manager as well as transparent stock prices, the accounting regime choice depends on the model parameters.

Lemma 3 *The fair value (historical cost) accounting regime is beneficial, if the following equation is positive (negative).*

$$E_0\left[U^E\left(V,S\right)\middle|\, FV\right] - E_0\left[U^E\left(V,S\right)\middle|\, HC\right]$$
$$= \frac{1}{2}\,\sigma_\eta^2\left(2c\bar{D}r - \frac{\beta^4\gamma\xi^2}{B\left(\sigma_\mu^2+\sigma_\lambda^2\right)\left(B\left(\sigma_\mu^2+\sigma_\eta^2+\sigma_\lambda^2\right)\right)}\right)$$

where $B \equiv \delta + \beta^2\xi + \gamma\delta\xi$

Proof. *See appendix.*

Lemma 3 shows that the financial accounting regime choice is ambiguous. We finally use a comparative static analysis to show how the relative advantage of a financial accounting regime will depend on the model parameters.

Proposition 1 *The entrepreneur is more willing to choose the fair value accounting regime if*

(i) his preference for consumption smoothing (c) increases or

(ii) the risk aversion of market participants (r) increases or

(iii) the manager's disutility of effort (δ) increases or

(iv) the production risk of the firm (σ_μ^2) increases or

(v) the productivity of the manager (β) decreases or

(vi) the disutility of manipulation ξ decreases or

(vii) the accounting noise σ_λ^2 increases.

The effect is unclear if

(viii) the risk aversion of the manager (γ) increases or

(ix) market risk (σ_η^2) increases.

Proof. *See appendix.*

The intuition for (i) and (ii) is straightforward. As the preference for consumption smoothing increases, the entrepreneur prefers more disclosure or rather efficient stock prices. Therefore, the entrepreneur's utility under historical cost accounting will, ceteris paribus, decrease in comparison to fair value accounting. As the risk aversion of market participants increases, they demand a higher risk premium for the risky asset. Due to the fact that uncertainty about the terminal firm value under historical cost is higher than under the fair value regime, the stock price will decrease relatively more in the historical cost accounting regime and the entrepreneur is more willing to choose the fair value accounting regime.

As we would expect, (iii) and (iv) imply that increasing disutility of effort and increasing production risk make the fair value accounting regime more favorable. As δ increases, inducing effort will be more costly, the entrepreneur lowers $\hat{\omega}_1$ and thus the equilibrium amount of effort decreases. Therefore, using an accounting regime to assess managerial actions to induce high effort will be less effective and historical cost accounting becomes less beneficial in comparison to fair value accounting. The same is true for production risk. If σ_μ^2 increases the variance of the stock price will also increase. Therefore, the manager demands a higher risk premium and the entrepreneur lowers $\hat{\omega}_1$. On the other hand, as the productivity factor β increases (v), more effort leads to a higher terminal firm value and (interim) stock prices. The manager will exert more effort. In this situation, the entrepreneur is more willing to choose the historical cost regime to more efficiently induce high managerial effort.

With increasing cost of manipulation ξ (vi), the equilibrium amount of manipulation decreases. The entrepreneur responds by increasing $\hat{\omega}_1$, which leads to higher effort. In this situation historical cost accounting becomes more favorable for the entrepreneur. If accounting noise σ_λ^2 increases (vii), account-

ing information looses the ability to asses managerial effort and motivating the manager to exert high effort will be more expensive and fair value accounting becomes relatively more desirable.

For (viii) and (ix) the intuition is more complex: On the one hand, as managerial risk-aversion γ increases (viii), inducing high effort will be more costly and the entrepreneur lowers $\hat{\omega}_1$ and choosing fair value becomes beneficial to the entrepreneur. On the other hand, an increasing level of managerial risk-aversion will lead to a higher risk premium in the compensation contract. Because uncertainty in the compensation contract is higher in the fair value accounting regime, the historical cost accounting regime becomes relatively more favorable. The aggregate effect on financial accounting regime choice is ambiguous. The same cross effect will hold for market risk (ix). As σ_η^2 increases, the disutility of stock price opaqueness under the historical cost accounting regime will increase. However, the fair value accounting regime negatively affects the risk-sharing between manager and entrepreneur. Again, the aggregate effect is ambiguous. In the next section we use observational data to test the main implications of Proposition 1 for empirical validity.

3 Empirical Analysis

3.1 Research Design and Variable Definitions

To test the theoretical predictions of the analytical model, we need to identify a testable functional relationship between the endogenous construct (financial accounting regime choice) and its exogenous determinants. Also, we have to identify suitable proxy variables for our constructs. Following a pragmatic approach, we decide to model the following conceptual linear functional relationship:

$$\text{fair value orientation} = f(\text{importance of equity markets } (+), \text{management productivity } (-), \text{opportunity cost of management } (+), \text{quality of enforcement } (-)) \quad (16)$$

While this approach simplifies the results of the comparative static analysis, it allows us to translate the general intuition of the model into an empirical research design. The fair value orientation of an accounting regime should increase with the overall importance of the country's equity market. We expect it to decrease with the overall importance of management incentivization, as captured by managerial productivity. The higher the opportunity cost of management, the less attractive is stock-based compensation and the more financial accounting regimes can be expected to be geared towards fair value. Finally, the higher the quality of enforcement, the higher the personal cost that the manager will face when manipulating the accounting outcome. Thus, accounting-based contracting becomes more efficient.

Measuring the fair value orientation of financial accounting regimes is non-trivial and we were unable to identify accepted measures in the existing literature. This is why we use a set of four different measurement approaches. First, we use firm-year accounting and capital market data to construct a country-year level measure of fair value orientation based on firm-year level financial accounting choices. The intuition behind this approach is that firms are documented to follow incentives and rules when making financial accounting decisions (Ball, Robin and Wu, 2003). While our model only allows for manipulation but not for managerial reporting regime choices, we think that an empirical construct of fair value orientation should at least to some extend accommodate the managerial discretion inherent in the financial reporting pro-

cess. Since our first measure is based on firm reporting outputs, we characterize it as output oriented.

To construct the output-oriented measure of fair value orientation (FVO_OUT), we measure four distinct constructs which prior literature has documented to capture the fair value or market value orientation of financial accounting information (Penman, 2007).[3] The first construct is the absolute residual ($|\epsilon_{VR}|$) of the following value relevance regression (Barth, 1994; Barth, Beaver and Landsman, 1996; Khurana and Kim, 2003), regressing fiscal year buy and hold returns on net income and change in net income, separtely for each country-year:

$$\begin{aligned} BHRET = {} & \text{Industry fixed effects} + \alpha_1\ NIBE \\ & + \alpha_2\ DNIBE + \epsilon_{VR} \end{aligned} \tag{17}$$

Higher values of $|\epsilon_{VR}|$ indicate lower value relevance and thus less fair value orientation. The second construct is the absolute residual ($|\epsilon_{MB}|$) of a country-year regression that regresses the market-to-book ratio on total assets, leverage and total asset growth:

$$\begin{aligned} MTB = {} & \text{Industry fixed effects} + \beta_1\ SIZE \\ & + \beta_2\ LEVERAGE + \beta_2\ ASSETGR + \epsilon_{MB} \end{aligned} \tag{18}$$

Again, larger values of $|\epsilon_{MB}|$ indicate less fair value orientation. The third construct is the absolute residual ($|\epsilon_{GT}|$) of the following country-year regression that estimates net income on fiscal year buy and hold returns for firm-year observations with positive returns only:

$$NIBE = \text{Industry fixed effects} + \gamma_1\ BHRET + \epsilon_{GT} \tag{19}$$

[3] Throughout this section, all variables are as defined in Figure 2.

Based on the argument of asymmetric timelines introduced by Basu (1997), we expect firms with more fair value oriented accounting regimes to report gains on a more timely basis. So, larger values of $|\epsilon_{GT}|$ indicate less fair value orientation.

The fourth construct $AFOLLOW$ captures the analysts following a given firm in a given year as reported by IBES. As analysts generally state that they prefer fair value based accounting regimes (Gassen and Schwedler, 2010), we expect firms with a more fair value oriented accounting regime to have higher analyst following.

Finally, the fifth construct, $REPLAG$, captures the delay between fiscal year end and public disclosure of the annual report, again as reported by IBES. As fair value based accounting regimes generally tend to require more timely disclosures, we expect firms with more fair value oriented reporting to provide more timely disclosures.

In order to condense these five different constructs into a combined measure of fair value orientation (FVO_OUT), we use a principal component analysis. By identifying the first principle component, we achieve two additional objectives. First, we can check whether our constructs load with the predicted sign, which gives us some indication about the validity of our constructs. Second, the first principle component analysis will minimize idiosyncratic measurement error of each individual construct. We use data from a total of 197,716 firm-years across 40 countries covering the time span 1990-2004 to estimate the models (17)-(19). We require at least 10 firm-year observations per first-digit SIC industry, country and year. To reduce the effect of outliers on our country-year level measure of fair value orientation, we truncate our absolute residuals at the 5% level. To estimate FVO_OUT, we require all five constructs to be present at the firm-year level. The resulting equation for

FVO_OUT, which explains 32.50% of the total variance of our constructs is:

$$\begin{aligned} FVO\_OUT = &- 0.364\ |\epsilon_{VR}| - 0.071\ |\epsilon_{MB}| - 0.521\ |\epsilon_{GT}| \\ &+ 0.473\ AFOLLOW - 0.349\ REPLAG \end{aligned} \tag{20}$$

We use a normalized version of FVO_OUT in our tests. We are able to calculate FVO_OUT for 40,460 firm-years. The average values of FVO_OUT by country and the resulting ranking are reported in Table 1, Panel A.

To balance the output orientation of FVO_OUT, we use input-oriented measures of fair value orientation. Ideally, one would assess the changing fair value orientation of all jurisdictions' financial accounting regimes over our sample period. However, this approach is not feasible since information on the time-changing fair value orientation of financial accounting regimes is scarce and highly country-specific. Thus, we take three different approaches to construct reliable input-oriented measures of fair value orientation. First, we use practitioner publications and additional accounting literature to identify the fair value orientation of as many national financial accounting regimes as we are capable. To do so, we classify the accounting regimes according to the following questions: (1) Is the recognition of self-generated intangibles forbidden, voluntary or mandatory? (2) Is the revaluation of intangible assets at fair value forbidden, voluntary or mandatory? (3) Is the revaluation of property, plant and equipment forbidden, voluntary or mandatory? (4) Is the valuation of trading securities at fair value forbidden, voluntary or mandatory? (5) Is the valuation of other financial assets at fair value forbidden, voluntary or mandatory? (6) Is the valuation of financial liabilities at fair value forbidden, voluntary or mandatory? (7) Is the usage of the percentage of completion method forbidden, voluntary or mandatory? For every question, we record two points for the answer 'mandatory' and one point for the answer 'voluntary'. The sum of points across all questions divided by 14 constitutes our dependent

variable FVO_IN_PL. We are able to calculate FVO_IN_PL for 18 of the 40 countries in our sample. The values of FVO_IN_PL and the corresponding country ranking can be assessed from Panel B.

In order to gather information on the fair value orientation of more jurisdictions in an objective manner, we rely on the results of an online survey (Eisenschink, 2013) where academics around the globe were asked to characterize recognition and measurement rules of their respective jurisdiction. The online survey presents information about several recognition and measurement principles for 34 countries. We use this data to classify the accounting regimes according to the following questions: (1) Is the recognition of research expenditures forbidden, voluntary or mandatory? (2) Is the recognition of development expenditures forbidden, voluntary or mandatory? (3) Is the revaluation of intangible assets forbidden, voluntary or mandatory? (4) Is the revaluation of property, plant and equipment forbidden, voluntary or mandatory? (5) Is the valuation of trading securities at fair value forbidden, voluntary or mandatory? (6) Is the valuation of derivatives at fair value forbidden, voluntary or mandatory? (7) Is the valuation of other financial assets at fair value forbidden, voluntary or mandatory? (8) Is the usage of the impairment-only approach for goodwill forbidden, voluntary or mandatory? (9) Is the usage of the percentage of completion method forbidden, voluntary or mandatory? Again, FVO_IN_SU is normalized to one by recording two points for the answer 'mandatory' and one point for the answer 'voluntary' and dividing the sum by 18. We are able to calculate FVO_IN_SU for 25 of the 40 countries in our sample. The value of the resulting measure can be assessed from Panel C.

The correlations of our three cross-country measures of fair value orientation are reported in Panel D. We would like to note that the significance level of the country-level correlations are based on very small sample sizes.

Still, we find our measures of fair value orientation to be robustly positively correlated. Also in line with our expectations, the correlation between the two input-oriented measures seems to be higher than the correlations between the input and the output oriented measures.

As FVO_IN_PL and FVO_IN_SU both lack a time dimension, we construct a final input-oriented measure (FVO_IN_US) based on the standards published by the FASB over the time period 1979 to 2009. While naturally, this measure allows only for a within US analysis, we are able to study whether our theoretical predictions are consistent with the development of the fair value orientations of US GAAP over time. To calculate FVO_IN_US, we use a linguistic analysis to assess the relative fair value orientation of SFASs over time. For every SFASs, we search for the keyword 'fair value' and scale the frequency counts of words by the total word count. Winsorizing the resulting by standard frequencies at the 5% level and averaging the frequencies over years of standard publications yields the time series of FVO_IN_US that is reported in Figure 1. As can be seen from this graph, the fair value orientation of US GAAP and the relative importance of the US equity market clearly seems to increase over time, while labor cost decreases over time.[4] We consider this as a reasonable confirmation of our theoretical predictions.

[Figure 1 about here]

To identify suitable country-year level independent variables for our main tests, we use data from the World Development Indicators database published by the World Bank (2012). $EQUITYCAP$ is the market capitalization of the country's equity markets deflated by the country's GDP and captures the relative importance of country's equity market. Identifying a suitable proxy

[4] See Khan (2010: Figure 1) for a time-trend of an output-oriented fair value orientation measure of US banks and Emerson, Karim and Rutledge (2010) for a historic overview about the fair value orientation of US GAAP.

variable for management productivity is obviously problematic, since (potential) management productivity is hard to observe. We use the economy-wide fraction of labor cost over sales ($LABORCOST$) as our proxy. The rationale for that is as follows. Conceptually, managerial output can be described as deciding upon the relative factor usages in production. We expect the usage and productivity of non-labor input factors to be relatively easy to observe and verify by third parties like investors. On the other hand, labor is an important input factor which is hard to observe, to manage and to quantify. Thus, we argue that managerial efficiency becomes more relevant in labor-intensive production (Lieberman, Lau and Williams, 1990).

To assess the opportunity cost of managerial agents, we focus on the income inequality within countries. As it seems reasonable to assume that top-level management of public firms is likely to be located in the top income bracket, the income share held by the 10% bracket with the highest income (INC_INEQ) can be regarded as a sensible estimator for the opportunity cost of top-level management. In countries where INC_INEQ is high it is likely more costly to incentivize top-level management compared to countries with a more equal income distribution.

As we are not aware of a specialized measure that captures the quality of financial accounting enforcement at the country-year level, we follow prior literature (Hail and Leuz, 2006; for an overview Holthausen, 2009) in using the rule of law ($RULELAW$) indicator from Kaufmann, Kraay and Mastruzzi (2009) as a proxy variable for the quality of the accounting enforcement.

Based on these exogenous variables, we estimate the following two model versions:

$$\begin{aligned} DEPVAR = {} & \text{Yearly fixed effects} + \alpha_1\ EQUITYCAP \\ & + \alpha_2\ LABORCOST + \alpha_3\ INC\_INEQ \end{aligned}$$

$$+ \alpha_4 \; RULELAW + \epsilon \tag{21}$$

$$\begin{aligned} DEPVAR = {} & \text{Yearly fixed effects} + \beta_1 \; EQUITYCAP \\ & + \beta_2 \; LABORCOST + \beta_3 \; INC\_INEQ \\ & + \beta_4 \; RULELAW + \beta_5 \; LN\_GDP \\ & + \beta_6 \; LN\_GDP\_CAPITA + \beta_7 \; BONDCAP + \epsilon \end{aligned} \tag{22}$$

Each model is estimated for all three cross-country measures of fair value orientation FVO_IN, FVO_OUT_PL and FV_OUT_SU. For model (22), we add three additional control variables. LN_GDP measures the natural logarithm of the annual country-wide gross domestic product (GDP). LN_GDP_CAPITA reports the natural logarithm of GDP per capita. We include these two control variables to test whether our results of model (21) are driven by omitted exogenous variables which are linked to the overall magnitude or the economic development of the respective country. In addition, we include $BONDCAP$ which measures the market capitalization of the organized bond market relative to the country's GDP. We include $BONDCAP$ to control for effects of the organized debt market as we do not model debt in our analytical set-up and we want to make sure that the importance of debt market is not driving our results. We make no sign predictions for our control variables.

In our last test, we use our US GAAP based time series measure of fair value orientation as a dependent variable. Since we are basing our inference on a simple time series of yearly observations, we try to use data for the longest time series available. This requires us to drop INC_INEQ and $BONDCAP$, since we are unable to obtain long enough time series.[5] Also note, that the remaining two control variables LN_GDP and LN_GDP_CAPITA are highly

[5] For example, time series World Bank data about US income inequality is only available for periods after 2000.

correlated and thus we fear that the power of the potential regression is likely to be very low. Therefore, we decided to estimate the following model, both univariately and multivariately:

$$FVO\_IN\_US = \gamma_0 + \gamma_1\ EQUITYCAP\_US + \gamma_2\ LABORCOST\_US + \epsilon \tag{23}$$

We use data from the 'US Board of Governors of the Federal Reserve System' to measure the relative importance of the US equity market. $EQUITYCAP\_US$ is market value of equities outstanding for the non-financial firms deflated by GDP. We use Compustat to measure $LABORCOST\_US$ which is labor and related cost over net sales. Since information about labor cost is only available for years beginning 1979, we are basing our inference on a simple time series of 31 observations.

3.2 Data and Results

To estimate our output-oriented measure (FVO_OUT), we start with the intersection of the Worldscope database, Datastream capital market data (CRSP for the US) and IBES data. We include countries which have at least 100 firms included in Datastream. Our base firm-year sample comprises 197,716 observations from 40 countries covering the time span 1990 to 2004. Based on these observations and the methodology explained in section 3.1 we are able to calculate our firm-level FVO_OUT metric for 40,460 firm-year observations. The values of the individual FVO_OUT components and the firm-year level sample sizes per country are reported in Table 1, Panel A.

Our input-oriented dependent variables are based on fewer countries and on actual accounting standards of the respective countries and are detailed in Panel B and C. The country-level Pearson and Spearman correlations are presented in Panel D. As already stated in the last section, we view the ro-

bustly positive correlations of our constructs as evidence consistent with them capturing related but different aspects of the same underlying construct.

[Table 1 about here]

Table 2 reports the main country-year test results for the models (21) and (22). Panel A reports descriptive statistics for all country-year observations and Panel B reports Pearson and Spearman correlations between our dependent and independent variables. The results with FVO_OUT as dependent variable are based on 495 country-year observations. When we use FVO_IN_PL as our dependent variable the sample size comprises 241 observations. The results for the survey-based variable FVO_IN_SU are based on 324 observations. The correlations presented in Panel B provide first univariate evidence for our variables of interest. We find that $EQUITYCAP$ is significantly positive related to all of our fair value orientation measures. $LABORCOST$ is consistently negatively related only to our input-oriented fair value orientation measures. For the other exogenous variables the results are more mixed highlighting the importance of a multivariate analysis. The correlations between the exogenous variables are low to moderate.

Panel C reports the model results. Consistently throughout all models, we find a positive and significant coefficient for $EQUITYCAP$ indicating (in line with our theoretical predictions) that countries with more influential organized equity markets choose more fair value oriented accounting regimes. Also in line with our expectations, we find for all models a negative significant coefficient for $LABORCOST$ indicating that countries where production is more labor intensive (and thus managerial productivity has a larger impact on firm value) choose less fair value oriented accounting regimes. The results for INC_INEQ, while only robust for FVO_OUT and FVO_IN_SU, are also as expected: Countries with larger inequalities in the income distribution are also imposing more fair value oriented accounting regimes. That is consistent with

the theoretical prediction that managerial opportunity cost make contracting based on historical cost accounting regimes relatively less attractive.

We find contradicting evidence for the impact of enforcement quality on financial accounting regime choice. While our theory predicts a negative relation, we find for most specifications of our models a positive and often significant relation between rule of law and fair value orientation. Thus, we are unable to support our theoretical predictions about the effect of accounting quality and enforcement on financial accounting regime choice. One potential reason for this finding might be that financial accounting information reported under historical cost regimes requires lower verification efforts compared to financial accounting information produced under fair value reporting. While our theoretical model assumes symmetric manipulation cost, it might be that this potential asymmetry is affecting our findings.

While we generally make no predictions for our control variables, we take interest that, first, their inclusion only has a modest impact on our coefficients of interest, and second, that the relative magnitude of the bond market has no power for explaining the fair value orientation of our respective accounting regimes.

[Table 2 about here]

Table 3 repeats the analysis of Table 2 using country-level data to accommodate the fact that two of our dependent variables have no time-level variance. While running the analysis dramatically reduces the degrees of freedom, we continue to find a generally positive relation of fair value orientation with the relative size of the equity market and a negative relation of country-wide average labor cost. We view this as evidence consistent with our theoretical prediction that our identified main drivers of financial accounting regime choice namely the relative importance of capital markets and managerial in-

centivation are systematically related to the country-level financial accounting regime.

[Table 3 about here]

This conclusion is enforced by our last test presented in Table 4. The univariate time series results show robust positive ($EQUITYCAP\_US$) and negative ($LABORCOST\_US$) relations to the development of fair value orientation of US GAAP. The multivariate analysis shows a positive and significant coefficient for $EQUITYCAP\_US$ and a negative but insignificant coefficient for $LABORCOST\_US$. We see both tests as evidence backing our results of prior tests in the sense that they do not contradict prior findings: Over the last decades, the relative importance of US equity markets increased and the labor intensity of US public firms decreased. Based on our theoretical model, this would lead us to predict an increase in the fair value orientation of US GAAP and this is what we find. However, based on a 31 year time series we are inherently unable to rule out alternative explanations.

[Table 4 about here]

4 Conclusion

This paper investigates determinants of financial accounting regime choice in a setting where financial accounting objectives compete. To develop our theoretical argument, we set up an agency model where a risk-neutral entrepreneur contracts with a risk-averse manager in a world with moral hazard and private information. The value of the firm is non-contractible and unobservable until the last period. It depends on the effort level and productivity of the manager, internal production risk and external market risk. The manager receives private noisy accounting information about the firm value after she has chosen her effort level and is able to bias the accounting report at private

cost. The accounting report informs a risk-averse capital market with rational expectations. The share prices of this market are used by the entrepreneur to incentivize the agent by a linear share-based compensation contract. In addition, the entrepreneur sells a certain share of his firm in an interim period to smooth consumption. We model the financial accounting regime choice decision by letting the entrepreneur decide between two noisy accounting regimes. The first regime (labeled as historical cost) reports only the firm value effects of the managerial effort and the production risk while the second (labeled as fair value) reports the full firm value, including the exogenous market risk.

Our analytical findings indicate that, in equilibrium, the entrepreneur will balance his two competing accounting objectives. Larger levels of risk-averseness of the capital market or a larger preference for consumption smoothing are increasing the demand for the fair value oriented accounting regime. More productive managers shift the demand towards the historical cost accounting regime. Managers with higher opportunity cost cause more demand for the fair value oriented accounting regime. Finally, better enforced and less noisy accounting regimes tend to increase the demand for the historical cost accounting regime.

We test our theoretical predictions based on a worldwide sample covering 40 countries. We use input and output-oriented measures of fair value orientation as our dependent variable. Our output-oriented measure is the first principle component of five firm-year level financial accounting outcome-based constructs of fair value orientation. Our input-oriented metrics are based on the financial accounting standards of the respective countries. We use macroeconomic proxy variables indicating the importance of capital markets, management productivity, management opportunity cost and the efficiency of the national enforcement systems. Our results provide strong support for the positive effect of the importance of organized equity markets and the negative

effect of management productivity on fair value orientation. We find slightly weaker support for the positive effect of management opportunity cost on the preference for fair value oriented accounting regimes. Finally, we find conflicting evidence for the impact of the efficiency of the national enforcement systems.

Our findings should be interpreted with care for several reasons. First, our model (like every model) captures only some aspects of reality. Our accounting regimes are highly stylized. We let the entrepreneur pick his efficient accounting regime. We acknowledge, however, that in reality the financial accounting regimes can be the result of a political process. We model accounting noise to be constant across accounting regimes. Second, empirically, our dependent variables are subject to substantial measurement error. We try to address this valid concern by using multiple constructs and by using both input and output-related measures as dependent variables in separate tests. This way, we feel that we are able to triangulate the economic effect we are looking for. In addition, our exogenous independent variables are noisy measures of our analytical constructs.

Notwithstanding these caveats, our research speaks to the important question of financial accounting regime design. It suggests and tests an efficiency based explanation for the observed international variance in financial accounting standards. Our results are consistent with this variance being at least partially caused by efficient regime choice due to competing financial accounting objectives in different countries. Understanding the reasons for the international divergence in financial accounting regimes should be of general interest to academics and practitioners in the area of (international) financial accounting.

Appendix: Proof of Lemmas and Propositions

Proof of Lemma 1.

Because the manager learns μ and η in t_1 she expects the following stock price in t_0:

$$E_0[S \mid AR] = \frac{1}{1+\hat{\omega}_1}\left(\beta\hat{e} + (\hat{\alpha} - \alpha^e) - \hat{\omega}_0 - r\bar{D}Var\left[V \mid AR\right]\right) \tag{A.1}$$

The conditional variance of the stock price is:

$$Var[S \mid AR] = \left\{ \begin{array}{ll} \left(\frac{1}{1+\hat{\omega}_1}\right)^2 (\sigma_\mu^2 + \sigma_\lambda^2) & \text{if } AR = HC \\ \left(\frac{1}{1+\hat{\omega}_1}\right)^2 (\sigma_\mu^2 + \sigma_\eta^2 + \sigma_\lambda^2) & \text{if } AR = FV \end{array} \right\} \tag{A.2}$$

Substituting (A1) and (A2) in (5) yields:

$$\begin{aligned} E_0\left[U^M\left(W, e, \alpha\right) \mid AR\right] = \hat{\omega}_0 + \hat{\omega}(\beta\hat{e} + (\hat{\alpha} - \alpha^e) - \hat{\omega}_0 \\ - r\bar{D}Var\left[V \mid AR\right]) - \frac{\gamma}{2}\,\hat{\omega}_1^2\, Var\left[S \mid \theta\right] \\ - \frac{\delta}{2}\hat{e}^2 + \frac{\xi}{2}\hat{\alpha}^2 \end{aligned} \tag{A.3}$$

Since $Var[S \mid AR]$ and $Var\left[V \mid AR\right]$ are not involved in the optimization problem we obtain Lemma 1.

Proof of Lemma 2.

Starting point is the conditional utility function of the entrepreneur as expected in t_0:

$$\begin{aligned} E_0\left[U^E\left(V, S\right) \mid HC\right] = (1-c)(\beta\hat{e} - \hat{\omega}_0 - \hat{\omega}\,(\beta\hat{e} + (\hat{\alpha} - \alpha^e) - \hat{\omega}_0 \\ - r\bar{D}(\sigma_\eta^2 + \sigma_\lambda^2))) + \frac{c}{1+\hat{\omega}_1}(\beta\hat{e} + (\hat{\alpha} - \alpha^e) \\ - \hat{\omega}_0 - r\bar{D}(\sigma_\eta^2 + \sigma_\lambda^2)) \end{aligned} \tag{A.4}$$

$$E_0\left[U^E\left(V, S\right) \mid FV\right] = (1-c)(\beta\hat{e} - \hat{\omega}_0 - \hat{\omega}\,(\beta\hat{e} + (\hat{\alpha} - \alpha^e) - \hat{\omega}_0$$

$$- r\bar{D}\sigma_{\lambda}^{2})) + \frac{c}{1+\hat{\omega}_1}\left(\beta\hat{e} + (\hat{\alpha} - \alpha^{e}) - \hat{\omega}_0 - r\bar{D}\sigma_{\lambda}^{2}\right) \tag{A.5}$$

It can be shown that $E_0\left[U^M\left(W, e, \alpha\right) \mid \theta_{AR}\right] = 0$ holds if:

$$\hat{\omega}_0(HC) = \frac{\hat{\omega}^2\delta - \hat{\omega}^2\beta^2\xi + 2\bar{D}r\hat{\omega}\delta\xi(\sigma_{\eta}^2 + \sigma_{\lambda}^2) + \hat{\omega}^2\gamma\delta\xi(\sigma_{\lambda}^2 + \sigma_{\mu}^2)}{2\left(-1 + \hat{\omega}\right)\delta\xi} \tag{A.6}$$

$$\hat{\omega}_0(FV) = \frac{\hat{\omega}^2\delta - \hat{\omega}^2\beta^2\xi + 2\bar{D}r\hat{\omega}\delta\xi\sigma_{\lambda}^2 + \hat{\omega}^2\gamma\delta\xi(\sigma_{\eta}^2 + \sigma_{\lambda}^2 + \sigma_{\mu}^2)}{2\left(-1 + \hat{\omega}\right)\delta\xi} \tag{A.7}$$

Substituting (10) and (A6) [(A7)] in (A4) [(A5)] and taking the first order derivative with respect to $\hat{\omega}_1$ yields the equilibrium compensation contract.

Proof of Lemma 3.

After solving the optimal compensation contract, the following holds:

$$E_0\left[U^E\left(V, S\right) \mid HC\right] = -c\bar{D}r(\sigma_{\eta}^2 + \sigma_{\lambda}^2) + \frac{\beta^4\xi}{2\delta\left(\delta + \beta^2\xi + \gamma\delta\xi\left(\sigma_{\lambda}^2 + \sigma_{\mu}^2\right)\right)} \tag{A.8}$$

$$E_0\left[U^E\left(V, S\right) \mid FV\right] = -c\bar{D}r\sigma_{\lambda}^2 + \frac{\beta^4\xi}{2\delta\left(\delta + \beta^2\xi + \gamma\delta\xi\left(\sigma_{\eta}^2 + \sigma_{\lambda}^2 + \sigma_{\mu}^2\right)\right)} \tag{A.9}$$

Subtracting (A9) from (A8) will lead to Lemma 3.

Proof of Proposition 1.

We define $\triangle U^E = E_0\left[U^E\left(V, S\right) \mid FV\right] - E_0\left[U^E\left(V, S\right) \mid HC\right]$.

(i) $\partial\triangle U^E/\partial \mathrm{c} = \sigma_{\eta}^2\bar{D}\mathrm{r}$

(ii) $\partial\triangle U^E/\partial \mathrm{r} = \sigma_{\eta}^2\bar{D}\mathrm{c}$

(iii) Because δ is only a part of the denominator, it follows that: $\partial\triangle U^E/\partial\delta > 0$

(iv) Because σ_{μ}^2 is only a part of the denominator, it follows that: $\partial\triangle U^E/\partial\sigma_{\mu}^2 > 0$

(v) It can be shown that:

$$\frac{\partial \triangle U^E}{\partial \beta} = \frac{\beta^3 \gamma \delta \xi^2 \sigma_\eta^2 (2\delta K M + \beta^2 \xi (2 + \gamma \xi (\sigma_\eta^2 + 2(\sigma_\lambda^2 + \sigma_\mu^2))))}{\left(\beta^2 \xi + \delta K\right)^2 \left(\beta^2 \xi + \delta M\right)^2} > 0$$

where $K \equiv 1 + \gamma \xi (\sigma_\lambda^2 + \sigma_\mu^2)$

and $M \equiv 1 + \gamma \xi (\sigma_\eta^2 + \sigma_\lambda^2 + \sigma_\mu^2)$

(vi) Because $M > K$ the following inequality will hold:

$$\frac{\partial \triangle U^E}{\partial \xi} = \frac{1}{2}\, \beta^4 \left(\frac{1}{\left(\beta^2 \xi + \delta K\right)^2} - \frac{1}{\left(\beta^2 \xi + \delta M\right)^2} \right) < 0$$

(vii) Because σ_λ^2 is only a part of the denominator, it follows that: $\partial \triangle U^E / \partial \sigma_\lambda^2 < 0$

(viii) Because γ ist part of the nominator and the denominator, the sign of the derivative is unclear:

$$\frac{\partial \triangle U^E}{\partial \gamma} = \frac{\beta^4 \xi^2 \sigma_\eta^2 (2\beta^2 \delta \xi + \beta^4 \xi^2 - \delta^2 (-1 + \gamma^2 \xi^2 (\sigma_\lambda^2 + \sigma_\mu^2)(\sigma_\eta^2 + \sigma_\lambda^2 + \sigma_\mu^2)))}{2 \left(\beta^2 \xi + \delta K\right)^2 \left(\beta^2 \xi + \delta M\right)^2}$$

The entrepreneur is more willing to choose the fair value accounting regime if: $\delta + \beta^2 \xi < \gamma \delta \xi \sqrt{(\sigma_\lambda^2 + \sigma_\mu^2)(\sigma_\lambda^2 + \sigma_\mu^2)}$

(ix) The derivative can be either positive or negative, depending on variable values:

$$\frac{\partial \triangle U^E}{\partial \sigma_\eta^2} = c \bar{D} r - \frac{\beta^4 \gamma}{2 \left(\beta^2 \xi + \delta M\right)^2} \lesseqgtr 0$$

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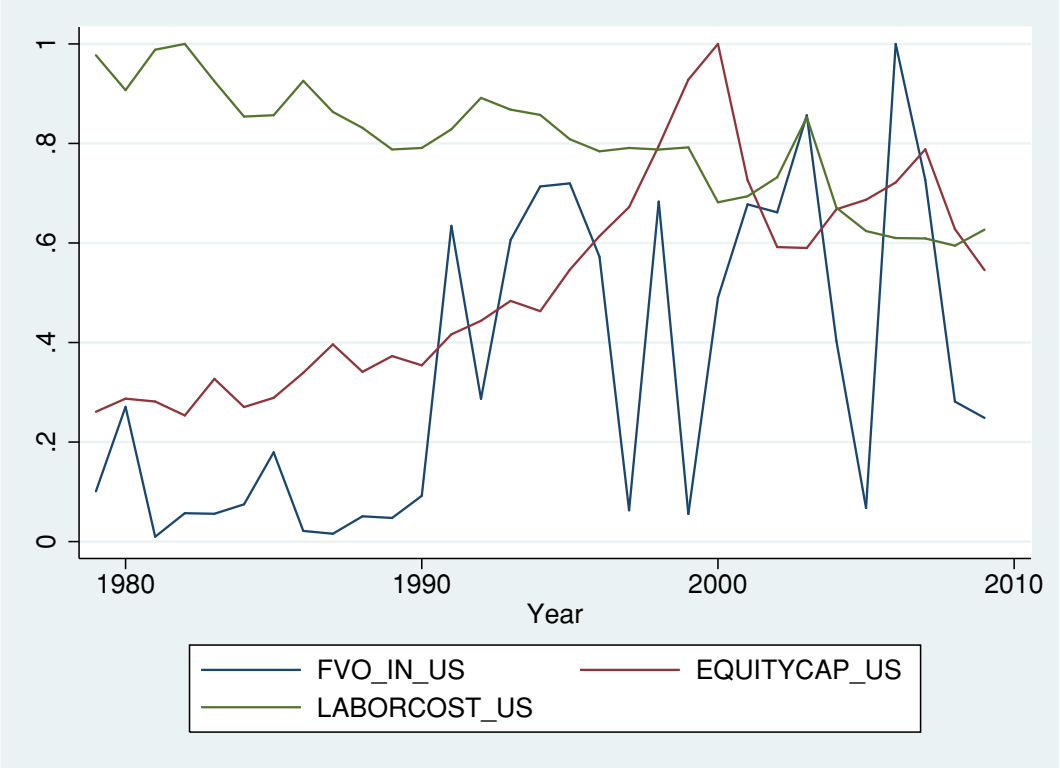
Figure 1: Time Series of FVO_IN_US



Notes: FVO_IN_US is a time series measure assessing the relative fair value orientation of SFASs over time. $EQUTYCAP\_US$ is market value of equities outstanding for non-financial US firms (Source: US Board of Governors of the Federal Reserve System) deflated by GDP (Source: US Department of Commerce, Bureau of Economic Analysis). $LABORCOST\_US$ is labor and related cost over net sales (Source: Compustat). FVO_IN_US, $EQUTYCAP\_US$ and $LABORCOST\_US$ are scaled to one by dividing with its maximum value.

Figure 2: Variable Definitions

Variable	Definition
Variables needed to calculate FVO_OUT Constructs	
$BHRET$	Buy-and-hold return over the fiscal year.
$NIBE$	Net income before extraordinary items deflated by beginning of fiscal year market value of equity.
$DNIBE$	Net income before extraordinary items minus previous fiscal year net income before extraordinary items deflated by beginning of fiscal year market value of equity.
MTB	Market value of equity over book value of equity.
$SIZE$	Natural logarithm of beginning of fiscal year total assets in million USD.
LEV	Debt over total assets.
$ASSETGR$	Asset growth rate over three years, beginning with the previous fiscal year.
Constructs of FVO_OUT	
$\|\epsilon_{VR}\|$	Absolute residual of a value relevance OLS regression presented by model (17).
$\|\epsilon_{MB}\|$	Absolute residual of an OLS regression of market to book on size, leverage, asset growth as presented by model (18)
$\|\epsilon_{GT}\|$	Absolute residual of an OLS regression of positive BHRET on NIBE as presented by model (19).
$AFOLLOW$	Natural logarithm of 1 + the average number of analysts following the firm as reported by IBES.
$REPLAG$	Number of days from the fiscal year end to the annual earnings announcement date as reported by IBES.
Fair Value Orientation Measures	
FVO_OUT	First principal component of the following variables: $\|\epsilon_{VR}\|$, $\|\epsilon_{MB}\|$, $\|\epsilon_{GT}\|$, AFOLLOW and REPLAG.
FVO_IN_PL	Self constructed fair value score based on practitioner publications and additional accounting literature.
FVO_IN_SU	Fair value score based on survey results from Eisenschink (2013).
FVO_IN_US	Time series measure assessing the relative fair value orientation of SFASs over time.

Figure 2: (continued)

Variable	Definition
Independent Variables (Country-year Level)	
$EQUTYCAP$	Market capitalization of the country's equity markets deflated by the country's GDP (Source: WDI, World Bank).
$LABORCOST$	Labor cost over sales (Source: Worldscope).
INC_INEQ	Income share of the top income decile of the population (Source: WDI, World Bank).
$RULELAW$	Kaufmann, Kraay and Mastruzzi (2009) rule of law measure.
LN_GDP	Natural logarithm of annual country-wide gross domestic product (GDP) in trillion USD. (Source: WDI, World Bank).
LN_GDP_CAPITA	Natural logarithm of GDP per capita (Source: WDI, World Bank).
$BONDCAP$	Market capitalization of the country's bond markets deflated by the country's GDP (Source: WDI, World Bank).
Independent Variables (US Time Series Analysis)	
$EQUTYCAP\_US$	Market value of equities outstanding for non-financial US firms (Source: US Board of Governors of the Federal Reserve System) deflated by GDP (Source: US Department of Commerce, Bureau of Economic Analysis)
$LABORCOST\_US$	Labor and related cost over net sales (Source: Compustat).

Notes: All variables used to estimate the FVO_OUT constructs and $LABORCOST$ are winsorized by country at their 1% and 99% percentile. The constructs of FVO_OUT are truncated at the 5% and 95% percentile.

Table 1: Measures of Fair Value Orientation

Panel A: FVO_OUT Measures by Country

Country	N	$\lvert\epsilon_{VR}\rvert$	$\lvert\epsilon_{MB}\rvert$	$\lvert\epsilon_{GT}\rvert$	AFOLLOW	REPLAG	FVO_OUT
Spain	458	0.216	0.853	0.056	2.381	97.109	0.411
Netherlands	715	0.220	1.222	0.051	2.355	101.982	0.366
US	13,474	0.252	1.198	0.058	1.760	41.354	0.307
New Zealand	98	0.209	1.230	0.066	1.730	61.776	0.166
Singapore	480	0.298	0.848	0.061	1.912	78.240	0.085
Finland	279	0.246	0.914	0.080	1.881	66.982	0.079
Japan	5,186	0.257	0.750	0.048	1.357	62.053	0.056
Canada	1,797	0.279	1.120	0.076	1.778	59.443	0.028
Belgium	230	0.180	0.803	0.051	1.725	124.683	−0.029
Australia	1,181	0.238	1.042	0.087	1.817	73.079	−0.047
Italy	591	0.225	0.859	0.064	1.956	124.509	−0.078
Malaysia	959	0.307	0.925	0.068	1.892	91.117	−0.079
France	1,690	0.238	0.941	0.054	1.876	126.388	−0.088
Hong Kong	860	0.301	0.900	0.085	2.175	102.553	−0.114
Denmark	346	0.231	0.744	0.057	1.684	115.627	−0.124
Switzerland	684	0.226	0.968	0.061	1.922	131.387	−0.131
UK	4,503	0.251	1.305	0.060	1.577	93.227	−0.143
Mexico	187	0.281	0.663	0.122	2.031	59.984	−0.161
Chile	216	0.259	0.853	0.051	1.321	92.056	−0.191
Sweden	666	0.276	1.007	0.078	1.663	85.239	−0.204
Norway	301	0.252	0.886	0.104	1.741	82.073	−0.293
Ireland	23	0.233	1.095	0.065	1.429	106.391	−0.306
Portugal	51	0.288	0.620	0.083	1.806	110.137	−0.307
Thailand	310	0.349	0.921	0.083	1.593	72.448	−0.320
South Africa	636	0.255	1.067	0.073	1.511	105.739	−0.353
India	398	0.365	1.401	0.073	1.664	90.673	−0.382
Germany	1,461	0.239	1.224	0.066	1.800	163.420	−0.486
China	405	0.368	1.144	0.067	1.461	99.109	−0.487
Austria	144	0.212	0.875	0.065	1.498	154.701	−0.515
Greece	320	0.337	1.148	0.057	1.587	176.006	−0.776
Philippines	130	0.276	0.968	0.127	1.919	139.838	−0.780
Brazil	215	0.310	0.865	0.164	1.657	75.423	−0.864
Indonesia	203	0.373	1.076	0.126	1.690	117.764	−0.936
Poland	62	0.309	0.818	0.079	1.288	161.645	−0.944
Turkey	353	0.345	1.145	0.121	1.654	128.853	−0.950
Peru	28	0.348	0.794	0.084	0.961	123.643	−0.995
South Korea	715	0.303	0.588	0.131	1.198	111.056	−1.056
Argentina	23	0.325	0.605	0.119	0.909	99.087	−1.089
Pakistan	48	0.319	0.802	0.079	1.046	164.188	−1.114
Russia	34	0.321	0.583	0.082	1.272	215.529	−1.319

Notes: This table presents the average values of FVO_OUT and its constructs by country. Variables are as defined in Figure 2. We use data from a total of 197,716 firm-years across 40 countries covering the time span 1990-2004 to assess the constructs of FVO_OUT. To estimate FVO_OUT, we require all five constructs to be present at the firm-year level and are able to calculate FVO_OUT for 40,460 firm-years. N is the number of firm-year observations.

Table 1: (continued)

Panel B: FVO_IN_PL Measures by Country

Country	RINT	FVINT	FVPPE	FVTS	FVFA	FVFL	POC	FVO_IN_PL	
Netherlands	2	1	1	2	1	0	2	0.643	(9)
Canada	2	0	0	2	2	0	2	0.571	(8)
Australia	2	1	1	1	0	0	2	0.500	(7)
Mexico	2	0	0	2	1	0	2	0.500	(7)
South Korea	2	0	0	2	1	0	2	0.500	(7)
US	0	0	0	2	2	1	2	0.500	(7)
Indonesia	1	0	0	2	1	0	2	0.429	(6)
Japan	0	0	0	2	1	1	2	0.429	(6)
Sweden	1	0	1	1	1	0	2	0.429	(6)
Switzerland	1	0	1	2	0	0	2	0.429	(6)
UK	1	1	1	2	0	0	1	0.429	(6)
India	2	0	1	0	0	0	2	0.357	(5)
Belgium	1	1	1	0	0	0	1	0.286	(4)
Russia	1	0	1	2	0	0	0	0.286	(4)
Brazil	0	0	1	0	0	0	2	0.214	(3)
France	0	0	1	0	0	0	1	0.143	(2)
Austria	0	0	0	0	0	0	0	0.000	(0)
Germany	0	0	0	0	0	0	0	0.000	(0)

Notes: This table details the construction of *FVO_IN_PL*. For each country, we use practitioner publications and additional accounting literature to identify the fair value orientation of the respective financial accounting regime. For every question, we record two points for the answer 'mandatory' and one point for the answer 'voluntary'. The sum of points across all questions divided by 14 constitutes our dependent variable *FVO_IN_PL*. Values in bracket are the sum of points of the following questions: RINT: Is the recognition of self-generated intangibles forbidden, voluntary or mandatory? FVINT: Is the revaluation of intangible assets at fair value forbidden, voluntary or mandatory? FVPPE: Is the revaluation of property, plant and equipment forbidden, voluntary or mandatory? FVTS: Is the valuation of trading securities at fair value forbidden, voluntary or mandatory? FVFA: Is the valuation of other financial assets at fair value forbidden, voluntary or mandatory? FVFL: Is the valuation of financial liabilities at fair value forbidden, voluntary or mandatory? POC: Is the usage of the percentage of completion method forbidden, voluntary or mandatory?

Table 1: (continued)
Panel C: FVO_IN_SU measures by country

Country	FVO_IN_SU	Country	FVO_IN_SU
Russia	0.667	China	0.333
Portugal	0.611	Japan	0.306
Spain	0.583	Poland	0.306
Denmark	0.500	Switzerland	0.306
Mexico	0.500	Finland	0.278
United Kingdom	0.500	Sweden	0.278
Netherlands	0.472	France	0.222
United States	0.472	Argentina	0.188
Canada	0.444	Italy	0.167
South Korea	0.389	Turkey	0.167
Greece	0.361	Germany	0.056
Norway	0.361	Austria	0.000
Belgium	0.333		

Notes: This table details the construction of FVO_IN_SU. We use information provided by Eisenschink (2013). The study presents online survey results from accounting academics. Respondents were asked to assess recognition and measurement rules of their home country. We use this data to classify the accounting regimes according to nine questions. For every question, we record two points for the answer 'mandatory' and one point for the answer 'voluntary'. The sum of points across the following questions divided by 18 constitutes our dependent variable FVO_IN_SU: (1) Is the recognition of research expenditures forbidden, voluntary or mandatory? (2) Is the recognition of development expenditures forbidden, voluntary or mandatory? (3) Is the revaluation of intangible assets forbidden, voluntary or mandatory?(4) Is the revaluation of property, plant and equipment forbidden, voluntary or mandatory? 5) Is the valuation of trading securities at fair value forbidden, voluntary or mandatory? (6) Is the valuation of derivatives at fair value forbidden, voluntary or mandatory? (7) Is the valuation of other financial assets at fair value forbidden, voluntary or mandatory? (8) Is the usage of the impairment-only approach for goodwill forbidden, voluntary or mandatory? (9) Is the usage of the percentage of completion method forbidden, voluntary or mandatory?

Table 1: (continued)
Panel D: Correlations of the Fair Value Orientation Measures

	FVO_OUT	FVO_IN_PL	FVO_IN_SU
FVO_OUT	1	0.547 (0.019) N=18	0.206 (0.324) N=25
FVO_IN_PL	0.426 (0.078) N=18	1	0.644 (0.013) N=14
FVO_IN_SU	0.204 (0.327) N=25	0.738 (0.003) N=14	1

Notes: Pearson (Spearman) correlations are below (above) the diagonal and numbers in brackets below the correlation coefficients are two-sided significance levels. Details of the variables are presented in Panel A-C. *N* is the number of country-level observations.

Table 2: Country-year Analysis
Panel A: Descriptive Statistics

Variable	N	Mean	Stdev	Q1	Median	Q3
Fair Value Orientation Measures						
FVO_OUT	495	−0.263	0.618	−0.548	−0.162	0.156
FVO_IN_PL	241	0.364	0.185	0.286	0.429	0.500
FVO_IN_SU	324	0.344	0.158	0.278	0.333	0.472
Independent Variables						
EQUTYCAP	495	0.728	0.645	0.287	0.503	0.960
LABORCOST	495	0.090	0.068	0.027	0.082	0.142
INC_INEQ	495	29.170	6.716	23.376	26.805	32.763
RULELAW	495	79.149	21.674	65.000	89.000	96.000
LN_GDP	495	0.800	1.617	0.131	0.250	0.618
LN_GDP_CAPITA	495	32.123	14.712	18.743	37.612	43.467
BONDCAP	495	0.366	0.241	0.204	0.323	0.469

Table 2: (continued)
Panel B: Correlations

	A	B	C	D	E	F	G	H	I	J
A: FVO_OUT	1	0.422 (0.000)	0.261 (0.000)	0.374 (0.000)	−0.010 (0.824)	−0.087 (0.054)	0.348 (0.000)	0.126 (0.005)	0.345 (0.000)	0.212 (0.000)
B: FVO_IN_PL	0.332 (0.000)	1	0.771 (0.000)	0.399 (0.000)	−0.450 (0.000)	0.096 (0.138)	−0.011 (0.861)	0.120 (0.062)	0.062 (0.341)	0.041 (0.524)
C: FVO_IN_SU	0.231 (0.000)	0.858 (0.000)	1	0.228 (0.000)	−0.150 (0.007)	0.215 (0.000)	−0.073 (0.188)	−0.026 (0.644)	−0.061 (0.274)	0.040 (0.470)
D: EQUTYCAP	0.236 (0.000)	0.357 (0.000)	0.180 (0.001)	1	−0.032 (0.482)	0.148 (0.001)	0.244 (0.000)	−0.026 (0.566)	0.312 (0.000)	0.131 (0.003)
E: LABORCOST	0.016 (0.731)	−0.441 (0.000)	−0.132 (0.017)	−0.014 (0.756)	1	−0.368 (0.000)	0.439 (0.000)	0.072 (0.111)	0.413 (0.000)	0.256 (0.000)
F: INC_INEQ	−0.099 (0.028)	0.079 (0.224)	0.201 (0.000)	0.219 (0.000)	−0.400 (0.000)	1	−0.651 (0.000)	−0.370 (0.000)	−0.491 (0.000)	−0.276 (0.000)
G: RULELAW	0.476 (0.000)	−0.070 (0.280)	−0.063 (0.255)	0.236 (0.000)	0.358 (0.000)	−0.553 (0.000)	1	0.115 (0.011)	0.684 (0.000)	0.170 (0.000)
H: LN_GDP	0.163 (0.000)	0.023 (0.723)	−0.021 (0.701)	−0.068 (0.129)	0.035 (0.442)	−0.328 (0.000)	0.183 (0.000)	1	0.388 (0.000)	0.222 (0.000)
I: LN_GDP_CAPITA	0.353 (0.000)	−0.018 (0.779)	−0.054 (0.330)	0.219 (0.000)	0.350 (0.000)	−0.537 (0.000)	0.832 (0.000)	0.295 (0.000)	1	0.382 (0.000)
J: BONDCAP	0.177 (0.000)	0.050 (0.441)	−0.002 (0.978)	−0.064 (0.154)	0.202 (0.000)	−0.219 (0.000)	0.253 (0.000)	0.260 (0.000)	0.338 (0.000)	1

Table 2: (continued)
Panel C: Regression Results

Parameter	Pred	FVO_OUT		FVO_IN_PL		FVO_IN_SU	
		Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
EQUTYCAP	+	0.085**	0.105***	0.235***	0.253***	0.066***	0.076***
		(0.043)	(0.043)	(0.022)	(0.022)	(0.021)	(0.022)
LABORCOST	-	−0.979***	−0.889**	−1.360***	−1.495***	−0.296**	−0.372***
		(0.397)	(0.396)	(0.137)	(0.139)	(0.145)	(0.153)
INC_INEQ	+	0.014***	0.017***	−0.003*	−0.004**	0.009***	0.009***
		(0.005)	(0.005)	(0.002)	(0.002)	(0.003)	(0.003)
RULELAW	-	0.015***	0.016***	−0.002***	−0.003***	0.001	0.001*
		(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
LN_GDP	?		0.065***		−0.034***		−0.016**
			(0.021)		(0.009)		(0.008)
LN_GDP_CAPITA	?		−0.076		0.031		−0.031
			(0.066)		(0.025)		(0.034)
BONDCAP	?		0.252		0.117***		0.032
			(0.103)		(0.039)		(0.039)
Yearly Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes
R^2		0.348	0.374	0.490	0.540	0.098	0.114
N		495	495	241	241	324	324

Notes: The sample is based on an unbalanced panel of country-year observations covering 40 countries and the time span 1990-2004. All variables are as defined in Figure 2. In Panel B, Pearson (Spearman) correlations are below (above) the diagonal and numbers in brackets below the correlation coefficients are two-sided significance levels. In Panel C, models (21) to (22) are estimated using OLS. Standard Errors are reported in brackets below coefficients. N is the number of observations. For parameters with a predicted sign, ***/**/* marks one-sided significance at the 1/5/10% level. For parameters with no sign prediction, ***/**/* marks two-sided significance at the 1/5/10% level.

Table 3: Country-level Analysis
Panel A: Descriptive Statistics

Variable	N	Mean	Stdev	Q1	Median	Q3
Fair Value Orientation Measures						
FVO_OUT	40	−0.348	0.480	−0.721	−0.233	−0.018
FVO_IN_PL	18	0.361	0.182	0.286	0.429	0.500
FVO_IN_SU	25	0.352	0.167	0.278	0.333	0.472
Independent Variables						
EQUTYCAP	40	0.666	0.526	0.317	0.496	0.847
LABORCOST	40	0.089	0.053	0.045	0.078	0.135
INC_INEQ	40	29.810	6.900	24.938	27.742	33.771
RULELAW	40	74.823	24.403	55.783	86.612	95.133
LN_GDP	40	0.708	1.467	0.133	0.220	0.580
LN_GDP_CAPITA	40	29.988	14.968	15.859	35.632	41.801
BONDCAP	40	0.340	0.221	0.195	0.304	0.426

Table 3: (continued)
Panel B: Correlations

	A	B	C	D	E	F	G	H	I	J
A: FVO_OUT	1	0.547 (0.019)	0.206 (0.324)	0.598 (0.000)	−0.014 (0.933)	−0.181 (0.264)	0.602 (0.000)	0.176 (0.278)	0.578 (0.000)	0.400 (0.011)
B: FVO_IN_PL	0.426 (0.078)	1	0.644 (0.013)	0.437 (0.070)	−0.582 (0.011)	0.055 (0.827)	0.041 (0.872)	0.068 (0.789)	0.191 (0.447)	−0.003 (0.990)
C: FVO_IN_SU	0.204 (0.327)	0.738 (0.003)	1	0.163 (0.437)	−0.204 (0.327)	0.192 (0.359)	−0.115 (0.584)	−0.015 (0.942)	−0.088 (0.676)	−0.030 (0.888)
D: EQUTYCAP	0.460 (0.003)	0.429 (0.075)	0.149 (0.477)	1	−0.036 (0.824)	0.018 (0.914)	0.425 (0.006)	−0.015 (0.925)	0.381 (0.015)	0.233 (0.147)
E: LABORCOST	0.045 (0.783)	−0.555 (0.017)	−0.104 (0.622)	−0.088 (0.591)	1	−0.522 (0.001)	0.505 (0.001)	0.044 (0.788)	0.422 (0.007)	0.300 (0.060)
F: INC_INEQ	−0.202 (0.212)	0.036 (0.886)	0.134 (0.524)	0.171 (0.292)	−0.492 (0.001)	1	−0.646 (0.000)	−0.338 (0.033)	−0.538 (0.000)	−0.333 (0.036)
G: RULELAW	0.727 (0.000)	−0.017 (0.948)	−0.155 (0.458)	0.344 (0.030)	0.401 (0.010)	−0.549 (0.000)	1	0.111 (0.497)	0.758 (0.000)	0.347 (0.028)
H: LN_GDP	0.251 (0.118)	0.027 (0.916)	−0.011 (0.960)	−0.057 (0.729)	0.001 (0.996)	−0.308 (0.053)	0.169 (0.297)	1	0.295 (0.065)	0.196 (0.225)
I: LN_GDP_CAPITA	0.543 (0.000)	0.015 (0.953)	−0.126 (0.547)	0.291 (0.068)	0.401 (0.010)	−0.518 (0.001)	0.830 (0.000)	0.242 (0.133)	1	0.414 (0.008)
J: BONDCAP	0.356 (0.024)	0.052 (0.836)	−0.071 (0.737)	−0.024 (0.884)	0.215 (0.184)	−0.272 (0.090)	0.385 (0.014)	0.271 (0.091)	0.388 (0.013)	1

Table 3: (continued)
Panel C: Regression Results

Parameter	Pred	FVO_OUT		FVO_IN_PL		FVO_IN_SU	
		Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Intercept	?	−1.767***	−1.593***	0.686***	0.600*	0.503	0.548
		(0.443)	(0.486)	(0.263)	(0.325)	(0.440)	(0.522)
EQUTYCAP	+	0.117	0.153*	0.304***	0.331***	0.120	0.133
		(0.112)	(0.111)	(0.088)	(0.090)	(0.108)	(0.122)
LABORCOST	-	−1.968**	−1.538*	−2.061***	−2.374***	−0.034	−0.072
		(1.092)	(1.093)	(0.541)	(0.579)	(0.730)	(0.886)
INC_INEQ	+	0.009	0.012	−0.006	−0.006	−0.002	−0.002
		(0.010)	(0.010)	(0.006)	(0.006)	(0.011)	(0.012)
RULELAW	-	0.017***	0.018***	−0.002	−0.003	−0.002	−0.002
		(0.003)	(0.004)	(0.002)	(0.002)	(0.003)	(0.004)
LN_GDP	?		0.071		−0.054		−0.010
			(0.045)		(0.032)		(0.038)
LN_GDP_CAPITA	?		−0.142		0.023		−0.023
			(0.127)		(0.077)		(0.138)
BONDCAP	?		0.257		0.106		0.050
			(0.245)		(0.151)		(0.198)
R^2		0.594	0.685	0.666	0.749	0.083	0.090
N		40	40	18	18	25	25

Notes: The sample is based on country-level observations with 40 countries. All variables are constructed as averages and are as defined in Figure 2. In Panel B, Pearson (Spearman) correlations are below (above) the diagonal and numbers in brackets below the correlation coefficients are two-sided significance levels. In Panel C, models (21) to (22) are estimated using OLS. Standard Errors are reported in brackets below coefficients. N is the number of observations. For parameters with a predicted sign, ***/**/* marks one-sided significance at the 1/5/10% level. For parameters with no sign prediction, ***/**/* marks two-sided significance at the 1/5/10% level.

Table 4: US Time Series Analysis

Parameter	Pred	FVO_IN_US	
		Univariate	Multivariate
Intercept	?		0.001
			(0.004)
EQUTYCAP_US	+	0.003***	0.002**
		(0.001)	(0.001)
LABORCOST_US	-	−0.024**	−0.006
		(0.010)	(0.014)
R^2			0.242
N		31	31

Notes: The table reports US time series results for 1979 to 2009. FVO_IN_US is a time series measure assessing the relative fair value orientation of SFASs over time. $EQUTYCAP\_US$ is market value of equities outstanding for non-financial US firms (Source: US Board of Governors of the Federal Reserve System) deflated by GDP (Source: US Department of Commerce, Bureau of Economic Analysis). $LABORCOST\_US$ is labor and related cost over net sales (Source: Compustat). N is the number of observations. ***/**/* marks one-sided significance at the 1/5/10% level.

Mandatory IFRS Adoption, Changes in Enforcement and Earnings Quality

Timo Eisenschink

Abstract: We investigate whether earnings quality effects are more pronounced post mandatory IFRS adoption in countries that substantially changed their enforcement system of accounting standards in comparison to countries that already had a strict enforcement system in place. Using a cross-country setting with mandatory IFRS adopters from 13 EU countries and 14 benchmark countries and 24,596 firm-year observations, we examine four earnings quality dimensions: earnings smoothing, accrual quality, small positive earnings and timely loss recognition. We find some evidence that adopting IFRS within an existing strict enforcement system is associated with less earnings smoothing in comparison to countries that substantially changed their enforcement system. However, we are not able to find statistically significant differences between changing and strict enforcement countries with respect to accrual quality, small positive earnings and timely loss recognition.

Keywords: Mandatory IFRS Adoption, Enforcement, Earnings Quality, Regulation

1 Introduction

The international process of accounting harmonization is advancing rapidly. Within the last 15 years more than 125 countries have decided to permit or require the application of International Financial Reporting Standards (IFRS, formerly IAS) for publicly listed firms (for an overview see Deloitte, 2013; PwC, 2013).[1] The European Parliament and the Council of the European Union (EU) justify the IFRS introduction arguing that a single set of high quality accounting standards facilitates the transparency and comparability of financial statements and that adopting IFRS is therefore expected to be associated with an increase in earnings quality (EC, 2002).

Several papers investigate whether the adoption of IFRS improves earnings quality. Early studies considering voluntary adopters predominantly find positive earnings quality effects. In contrast, evidence for mandatory adopters is inconsistent (for an overview see Brüggemann, Hitz and Sellhorn, 2013: 12). For example, Ahmed, Neel and Wang (2012) consider firms from 20 mandatory IFRS-adopting countries and a benchmark sample of firms from 15 non-adopting countries. They document that earnings quality decreases after mandatory IFRS adoption relative to the benchmark sample. Zeghal, Chtourou and Fourati (2012) investigate mandatory IFRS adoption in 15 EU countries and find that firms exhibit an increase in earnings quality after mandatory adoption in 2005. Chen et al. (2010) also examine firms from 15 EU countries and report mixed results. An explanation for the ambiguous evidence for mandatory IFRS adoption could be that voluntary adopters have incentives for high quality and transparent reporting. Therefore, increasing earnings quality could be shaped by incentives rather than applying IFRS (Soderstrom and Sun, 2007; Christensen, Lee and Walker, 2008; Ahmed, Neel

[1] For simplicity reasons, we refer to IFRS and IAS as IFRS.

and Wang, 2012).[2] Another reason could be that, in addition to accounting standards, earnings quality is also determined by the institutional environment. Prior literature shows that the institutional environment is more important in determining high quality accounting outcomes than accounting standards (Ball, Kothari and Robin, 2000; Ball, Robin and Wu, 2003; Leuz, Nanda and Wysocki, 2003; Burgstahler, Hail and Leuz, 2006; Bushman and Piotroski, 2006). A key institutional mechanism is the enforcement of accounting standards. This paper examines the impact of mandatory IFRS adoption versus the efficiency of accounting standards enforcement systems on earnings quality.[3]

European publicly listed firms have been mandated to apply IFRS in their consolidated statements since 2005.[4] Furthermore, this shift in accounting rules was the cornerstone for a harmonization of EU institutional oversight enforcement activities, because it requests EU member states "to take appropriate measures to ensure compliance with international accounting standards" (EC, 2002: Recital no. 16). These mechanisms required EU countries to install an institutional oversight enforcement system (hereafter enforcement system) that operates on a proactive basis, uses a risk-based (in some cases combined with a sample-based) selection technique and ensures the disclosure of detected errors (CESR, 2003). As a consequence, EU countries evaluated their enforcement mechanisms and either established new enforcement agencies or adjusted their existing enforcement system accordingly. Christensen, Hail and

[2] Capkun, Collins and Jeanjean (2013) argue that major changes in IFRS over time (especially around 2003-2005) allow more accounting choices, which explains the conflicting result between voluntary and mandatory adopters.

[3] FEE (2001: 8) defines enforcement as "all procedures in a country in order to assure the proper application of accounting principles and standards". Accordingly, they classify enforcement procedures across six different dimensions: (1) self-enforcement, (2) statutory audit of financial statements, (3) approval of financial statements, (4) institutional oversight system, (5) court sanctions and complaints and (6) public and press reactions. Note that we only consider institutional oversight enforcement mechanisms in this paper.

[4] Under certain conditions (e.g. using US-GAAP) the adoption of IFRS could be postponed until 2007 (EC, 2002: Recital no. 17).

Leuz (2013) present an overview of countries that substantially changed their enforcement systems: five European countries (Finland, Germany, the Netherlands, Norway and the UK) bundled the mandatory IFRS adoption with substantive changes in their enforcement system; and 13 countries already had a strict enforcement system in place encompassing the requested measures and thus no action was needed.[5] We use this setting to investigate whether earnings quality effects of mandatory IFRS adoption vary across these two groups: (1) IFRS adoption within a strict enforcement system and (2) IFRS adoption and a concurrent shift from a weak to a strict enforcement system.

The probability of detecting accounting errors is higher in a strict enforcement environment in comparison to a weak enforcement environment. This suggests that managers of firms in a strict enforcement environment are more willing to ensure a correct application of IFRS. Furthermore, IFRS requires managers to make assumptions regarding many accounting treatments. Strict enforcement systems reduce the set of possible assumptions and the manager loses opportunities to exert discretion on earnings numbers. Therefore, changing from a weak to a strict enforcement system should enhance earnings quality effects of mandatory IFRS adoption. This coincidence of changes in accounting standards and changes in the enforcement system should lead to higher earnings quality effects relative to countries with strict enforcement already in place. On the other hand, new enforcement mechanisms have to be initiated and it takes time for firms to get used to the new process. (Bhattacharya and Daouk, 2002; Ernstberger, Stich and Vogler, 2012). Consistent with this argument Christensen, Hail and Leuz (2013) document that most countries that changed their enforcement system in 2005 penalized infringing firms (public disclosure or restatement) in 2006/2007 for the first time. Hence, earnings

[5] Five EU countries changed their enforcement system in 2007 or 2009 (Christensen, Hail and Leuz, 2013; CESR, 2009).Austria has not yet established an institutional oversight enforcement system, but decided to establish an two-tier enforcement system by the end of 2013.

quality effects of mandatory IFRS adoption should be smaller relative to countries with a strict enforcement system. Therefore, different potential earnings quality effects between these two groups could explain prior ambiguous results.

Our IFRS sample comprises firms from 13 EU countries that adopted IFRS in 2005 for the first time (mandatory adopters).[6] We only consider EU countries that combined the IFRS introduction with a concurrent shift from a weak to strict enforcement system (catch-up countries) and countries that already had a strict enforcement system in place before 2005 (strict enforcement countries).[7] We also consider firms from 14 non-adopting benchmark countries. Benchmark firms were selected based on a propensity score matching to control for firms' incentives for earnings quality. The benchmark sample includes Japan that substantially changed its enforcement system in 2005 but did not adopt IFRS. This enables us to examine enforcement change effects that are unrelated to IFRS. The sample period is 2002 to 2008 (excluding 2005). We examine earnings quality along four dimensions: earnings smoothing, accrual quality, small positive earnings and timely loss recognition.

We apply two different test designs to examine whether earnings quality effects of mandatory IFRS adoption might vary between catch-up countries and strict enforcement countries. In the first test, we investigate whether mandatory IFRS adoption is associated with an increase in earnings quality in comparison to the benchmark sample. Comparing IFRS and benchmark firms, we find that IFRS firms smooth earnings to a larger extent and recognize large losses in a more timely manner after mandatory IFRS adoption. However, we do not find significant differences in accrual quality and the frequency of report-

[6] Note that IFRS was introduced in the EU at different times. For example, some countries (e.g. Austria or Germany) allowed a voluntary adoption of IFRS before 2005, whereas other countries did not (e.g. France and the UK).

[7] Because of potential confounding effects, we do not consider EU countries that substantively changed their enforcement system after 2005 (e.g. Sweden and Ireland in 2007) or Austria with still no enforcement system in place.

ing small positive earnings between IFRS and benchmark firms. Furthermore, we compare earnings quality effects of IFRS and benchmark firms conditional on the enforcement system. Therefore, we divide the full sample into a catch-up and a strict enforcement partition. For the strict enforcement partition, we find weak evidence that IFRS firms engage in less earnings smoothing and recognize large losses in a timely manner in comparison to benchmark firms, but again we do not find support for accrual quality and small loss avoidance. For the catch-up partition, we find that mandatory IFRS adoption is associated with an increase in earnings smoothing and lower frequency of reporting small positive earnings. Results for accrual quality and large negative earnings are not significant. In the second test, we directly investigate earnings quality effects of IFRS firms. Thus, using only IFRS firms, we confirm the results of the first test-series by documenting negative earnings smoothing effects for firms located in catch-up countries relative to firms located in strict enforcement countries after mandatory IFRS adoption. In contrast, we do not find significant differences between catch-up and strict enforcement firms for the other three earnings quality measures. Taken together, our results are ambiguous and do not confirm the hypothesis that earnings quality effects of mandatory IFRS adoption differ between firms located in strict enforcement and catch-up countries.

In the main analysis we examine the influence of enforcement activities on accounting choices using earnings quality attributes. Although these measures are frequently used in prior literature, it is acknowledged that they are noisy constructs. Therefore, we complement our analysis by a small additional test that investigates the influence of enforcement changes on disclosure compliance for voluntarily adopting firms in a country that changed its enforcement system (Germany) versus a non-changing country (Austria). We find that compliance increases between 2004 and 2008 in Austria and Germany. However, we find

no evidence that changes in the quality of enforcement are related to increasing disclosure compliance.

We contribute to the literature by shedding further light on the impact of changes in accounting standards versus the efficiency of enforcement on earnings quality. We differ from other studies in two aspects: First, we use more direct measures of accounting enforcement activities, and second, we examine the interaction between mandatory IFRS adoption, earnings quality and changes in enforcement. Others studies that address earnings quality effects of mandatory IFRS adoption either use time-invariant enforcement measures (Cai, Rahman and Courtenay, 2008; Chen et al., 2010; Ahmed, Neel and Wang, 2012) or do not incorporate enforcement effects (Capkun et al., 2008; Jeanjean and Stolowy, 2008; Zeghal, Chtourou and Fourati, 2012); thus they do not distinguish between countries that substantially changed their enforcement system (catch-up countries) and countries that did not substantially changed their enforcement system (strict enforcement countries). Furthermore, most studies that investigate the link between enforcement and earnings quality use the rule of law score (Chen et al., 2010; Ahmed, Neel and Wang, 2012), or measures for the quality of the legal system (Leuz, Nanda and Wysocki, 2003; Bushman and Piotroski, 2006), the quality of securities laws (Ali and Hwang, 2000; Leuz, Nanda and Wysocki, 2003) or a mixture of the described measures (Cai, Rahman and Courtenay, 2008) as proxies for the enforcement of accounting standards rather than measuring enforcement per se. We also relate to the extensive literature examining whether the institutional environment (e.g. strength of the legal system, enforcement of security laws or investor protection) influences accounting behavior (e.g. Ali and Hwang, 2000; Ball, Kothari and Robin, 2000; Ball, Robin and Wu, 2003; Leuz, Nanda and Wysocki, 2003; Burgstahler, Hail and Leuz, 2006; Bushman and Piotroski, 2006).

This paper continues as follows: In the second section, we describe the development of the enforcement systems in countries that substantially changed them in 2005. Section three summarizes the related literature and develops the hypotheses. Section four explains the research design, describes the sample selection, provides descriptive statistics and presents the results. Section five gives the analysis for disclosure compliance. Section six concludes.

2 Enforcement Changes in the European Union and Japan

Until 2005 institutional oversight enforcement systems (hereafter enforcement systems) were not harmonized across the EU. Figure 1 gives an overview of the types of enforcement authorities in the EU before 2005, which can be classified into stock exchange, public authority and private authority and even some countries (e.g. Finland, Germany and the Netherlands) had no enforcement system in place. The enforcement systems also differed according to the level of power attributed to the authority. Figure 2 shows that enforcement authorities operated on a reactive basis or on a proactive basis. Additionally, enforcement mechanisms differed with respect to potential penalties and sanctions. For example, in some countries firms had to disclose errors and faced high fines, whereas in other countries firms were not expected to disclose errors or faced only low fines. In short, before 2005 (pre-adoption period) enforcement systems differed in a variety of attributes (e.g. structure, power, review technique, penalty and sanction) ranging from no enforcement system in place to a high quality enforcement system (e.g. France).[8]

[Figure 1 and 2 about here]

To integrate the European capital market, the EU initiated the Financial Services Action Plan in 1999 to facilitate European investor protection and increase competition. As one important result, all European publicly listed

[8] For more information on the French enforcement system see the appendix.

firms have been mandated to apply IFRS in their consolidated statements since 2005 (EC, 2002). One of the goals of the mandatory IFRS introduction is to increase cross-country comparability of financial statements (EC, 2002: Article 1). Since merely adopting a single set of standards does not guarantee a uniform interpretation and application of accounting standards (Brown and Tarca, 2005), the regulation requests member states "to take appropriate measures to ensure compliance with international accounting standards" (EC, 2002, Recital no. 16). The EU decided not to establish a single supranational enforcement regulator but to delegate the exact enforcement design to national legislators. However, to assist member states with the development of an efficient enforcement system, the Committee of European Securities Regulators (CESR) released a set of 21 principles outlined in CESR Standard No. 1 (CESR, 2003).[9] The principles provide a definition of enforcement, guidelines for selection and action techniques and requirements for powers attributed to the enforcement agency.[10] Specifically, the principles demand proactive reviews, the use of a risk-based (in some cases combined with a sample-based) selection technique and the disclosure of detected errors (CESR, 2003). CESR peer reviews show a high level of implementation in national law across countries, except for Austria which plans to implement an enforcement system by the end of 2013 (CESR, 2009).

As Finland, Germany, the Netherlands, Norway and the UK created new enforcement systems or shifted from a reactive to a proactive enforcement system, they substantially changed their enforcement systems.[11] In addition,

[9] In 2011, CESR was replaced by the European Securities and Markets Authority (ESMA).

[10] CESR also released CESR Standard No. 2 (CESR, 2004). Since this standard predominantly addresses coordination concerns such as joint meetings, it is likely to be subordinated to the enforcement quality assessment.

[11] Norway is not an EU member state but belongs to the European Economic Area (EEA) covering the 28 EU member states plus Iceland, Liechtenstein and Norway. The EEA agreement allows the three non-EU members to access the EU internal market when they adopt the EU capital market directives. For simplicity, we refer to Norway as an EU member state.

Japan tightened rules for reviewing financial statements, disclosure requirements and auditing in 2005 and therefore changed its enforcement system but without adopting IFRS. In the following, we present an overview of the development of the enforcement systems in the five EU countries and Japan.

Finland

The Finnish enforcement system was set up by the Act of the Financial Supervision Authority in 2003. Under this act the public authority *Rahoitustarkastus* (FFSA, Finnish Financial Supervisory Authority) became responsible for supervising the financial reporting of Finnish listed firms and began to undertake proactive reviews at the beginning of 2005. The FFSA selects firms using a risk-based approach based on the probability of an error and the potential impact of this error on the Finnish capital market (FFSA, 2006). The probability of an error is based on a risk index comprising 15 (since 2008 21) risk indicators (e.g. firms' enforcement history, financial key ratios, business combinations and ownership). The impact of the error is measured by the market value of the firm. Thus, larger firms need a lower risk-index to get under review. Based on 133 listed firms the FFSA reviewed 16 financial statements (accounting for 12%) in 2007. In addition to full reviews of firms' financial statements, the FFSA conducts partial reviews where it investigates special areas of financial statements. Accordingly, in 2007 the FFSA reviewed goodwill impairment tests of four firms and the disclosure of financial instruments of 16 firms (FFSA, 2008). In 2009, the *Rahoitustarkastus* was renamed *Finanssivalvonta*. In 2006, infringing firms were penalized (public disclosure) for the first time (Christensen, Hail and Leuz, 2013).

Germany

Although Germany has one of the biggest capital markets in the world, there was no enforcement mechanism in place for a long time.[12] The German two-tier enforcement system was established at the end of 2004. The first tier is the private authority *Deutsche Prüfstelle für Rechnungslegung* (DPR, German Financial Reporting Enforcement Panel). The DPR performs reviews of financial statements on a proactive basis and uses a mixture of a risk-based and a sample-based approach to identify firms. The risk-based approach selects firms on events associated with high risk (IPO or business combinations). The sample-based approach aims to review large listed firms every four to five years and small listed firms every eight to ten years (DPR, 2009). In 2006, the DPR reviewed 158 annual financial statements, which accounts for 11% of all German listed firms. The reviews revealed 19 infringing financial statements (DPR, 2006). At the end of every year, the DPR announces 'examination main focus areas' for the following year. For example, for 2008 financial statements the DPR focused their reviews on requirements for asset impairment testing, purchase price allocation and the consolidation of special purpose entities (DPR, 2007). The second tier is the public authority *Bundesanstalt für Finanzdienstleistungsaufsicht* (BaFin, German Federal Financial Supervisory Authority). The BaFin supervises the DPR, which, as a private authority, does not have executive power. The BaFin intervenes if a firm is unwilling to cooperate with the DPR or if a firm and the DPR disagree on detected errors. Additionally, the BaFin checks that firms publish detected errors in the *Elektronischer Bundesanzeiger* (German Electronic Federal Gazette). In 2006, infringing firms were penalized (public disclosure) for the first time (Christensen, Hail and Leuz, 2013).

[12] Based on the equity market capitalization of listed firms, in 2004 (2010) Germany had the fifth (ninth) biggest capital market in the world (World Bank, 2012).

The Netherlands

Like Germany and Finland, the Netherlands had no enforcement mechanism in place before 2005. The enforcement system was introduced through the Supervisory Financial Reporting Act (*Wet toezicht financiële verslaggeving*) in 2006. This act equipped the public authority *Autoriteit Financiële Markten* (NAFM, Netherlands Authority for Financial Markets) with legal powers to monitor financial reporting of listed firms (NAFM, 2007). The NAFM started to proactively review financial statements in 2005 and thus one year ahead of the statutory approval. Doing so, the NAFN uses a mixture of a risk-based and a sample-based approach to select firms. The risk-based approach identifies accounting treatments that are expected to have a high risk. The sample-based approach aims to review listed firms every five years. Based on 240 listed firms, the NAFM reviewed 52 financial statements in 2007 (accounting for 21% of Dutch listed firms). The reviews detected seven cases of errors. The NAFM has no legal power to force firms to adjust their financial statement or to disclosure a press release in case of an error. If legal action is necessary, the NAFM refers the case to the Enterprise Section of the Amsterdam Court of Appeal, as happened on one occasion in 2007 (NAFM, 2008). In 2007, infringing firms were penalized (public disclosure and restatement) for the first time (Christensen, Hail and Leuz, 2013).

Norway

Until 2005 the *Oslo Børs* (Oslo Stock Exchange) was responsible for the supervision of the financial reporting of listed firms in Norway (FEE, 2001). The enforcement system included reviews in substance of financial statements. With the beginning of 2005, the *Kredittilsynet* (FSAN, Financial Supervisory Authority of Norway) was now required to monitor financial reporting of listed firms and simultaneously started to proactively review financial statements. Firms are selected by a mixture of a sample-based and a risk-based

approach. The FSAN reviewed the financial statements of 31 firms in 2007, which accounts for over 10% of Norwegian listed firms. The reviews detected an error in one case (FSAN, 2008). In 2009, the *Kredittilsynet* was renamed the *Finanstilsynet*. In 2006, infringing firms were penalized (public disclosure and restatement) for the first time (Christensen, Hail and Leuz, 2013).

The UK

Enforcement of accounting standards in the UK was introduced by way of the Financial Reporting Review Panel (FRRP) in 1991. FRRP is a private authority responsible for the enforcement of accounting standards for listed and large private firms. Initially it worked on a reactive basis. If the FRRP concluded that a firm potentially did not comply with UK GAAP, it first debated the issues with the management. If the parties did not reach a consensus, the FRRP had the power to refer the case to court (FEE, 2001; Fearnley et al., 2002). This reactive system was changed through the Companies Act in 2004 (Nobes and Parker, 2012). Now, the FRRP is equipped with more powers and reviews financial statements on a proactive basis. Financial reports are selected by a risk-based approach whereupon large listed firms have a higher probability of review relative to other listed and large private firms. In addition, the FRRP seasonally announces priority industries. From April 2005 to March 2006, the FRRP reviewed 208 annual and 76 interim financial statements and sent 82 letters to firms due to possible non-compliance (FRRP, 2006). If the FRRP and the respective firm agree on non-compliance, the FRRP usually releases a press announcement. If an agreement cannot be reached, the FRRP refers the case to court (FRRP, 2008). In 2005, infringing firms were penalized (public disclosure and restatement) for the first time (Christensen, Hail and Leuz, 2013).

Japan

After infringements were discovered in several Japanese firms (e.g. Seibu Railway), the public Financial Services Authority of Japan (FSAJ) reformed the Japanese enforcement system in 2005 to restore confidence in the financial markets. They released several measures to enhance the quality of audits and to strengthen and expand disclosure requirements. These measures are intended to restructure the framework for reviews of financial documents, enhance auditor oversight, increase penalties if disclosure requirements are not met, demand the disclosure of the auditor's opinion on the internal control system and require stock exchanges to take care of an appropriate and timely disclosure of financial information (FSAJ, 2004). The Japanese reform aims at improving audit quality and increasing disclosure, hereby only being partly related to enforcement issues. In contrast, the European reforms focus on enforcement only, regulating the institutional oversight system. However, we follow Christensen, Hail and Leuz (2013) and consider Japan as having substantially changed its enforcement system.

3 Prior Literature and Hypothesis Development

Prior literature suggests that earnings quality is determined by several factors. In addition to accounting standards, earnings quality is shaped by the enforcement of accounting standards, the regulatory, legal and political environment, other economic factors and notably firms' incentives (e.g. Soderstrom and Sun, 2007; Dechow, Ge and Schrand, 2010). Prior literature usually argues that enforcement of accounting standards lowers the possibility to exert discretion over accounting numbers and thus positively affects earnings quality (Hope, 2003; Leuz, Nanda and Wysocki, 2003). However, earnings quality is usually defined as a function of within-GAAP choices to opportunistically manipulate earnings numbers. Consequently, the link between enforcement and earnings quality is not as trivial as it seems.

Accounting choices do not exclusively pertain to the within-GAAP or the outside-GAAP system because there also exists a huge 'gray area'. Many accounting choices require professional judgment and it is often hard to assign a choice to one of the three areas (within, gray, or outside). Implementing an enforcement system reduces this ambiguity by introducing a boundary between the 'gray area' and the outside-GAAP area. This implies that some 'gray area' choices are banished into the outside-GAAP area and hence implementing an enforcement system lowers accounting choices. Furthermore, introducing an enforcement system increases the cost for the manager making accounting choices that are at the boundary between the 'gray area' and the outside-GAAP area. Now, the manager has to exert more effort to convince others, for example, the auditor or the enforcement agency, of the propriety of accounting treatments. Thus, borderline accounting treatments are becoming more costly and are solely attractive to managers that have strong incentives to manage earnings. Another aspect is that when managers (and auditors) fear that misstatements will be detected and sanctioned, they are more likely to avoid accounting errors or fraud.

Prior analytical and empirical evidence provide support for this discussion. Ewert and Wagenhofer (2005) analytically show that limiting managers' possibilities to exert discretion over the accounting report decreases accrual earnings management, increases the value relevance of accounting numbers and thus improves earnings quality. Goldman and Slezak (2006) employ a principal-agent model where a manager has the opportunity to manipulate an accounting report. They show that increasing penalties and detection rates (strict enforcement) could lower manipulation behavior. However, strict enforcement does not necessarily ensure less misreporting if the manager has strong incentives to do so. Empirical evidence supporting this finding is provided by Dechow, Sloan and Sweeney (1996). The authors document that strong oversight mechanisms decrease management fraud actions. Further-

more, several empirical studies point out that strict enforcement positively influences earnings quality. Leuz, Nanda and Wysocki (2003) show a negative association between earnings management and outside investor rights, legal enforcement and private control benefits. Cai, Rahman and Courtenay (2008) use a self-constructed enforcement measure to investigate the effects of enforcement on earnings management for a cross-country setting. They measure enforcement by an aggregate score based on legal factors and insider trading laws. They find that earnings management is less pronounced in countries with a strong enforcement system. Lang, Raedy and Wilson (2006) compare US firms with cross-listed firms. They argue that cross-listed firms face a weaker enforcement and litigation environment and show that cross-listed firms exhibit lower earnings quality comparing to US firms. In addition, they document that this effect is more pronounced for cross-listed firms from countries with a weak institutional environment. Bushman and Piotroski (2006) present evidence that a strong institutional environment leads to a more asymmetric recognition of good and bad news (conditional conservatism). Ernstberger, Stich and Vogler (2012) examine whether changes in the German enforcement system lead to lower earnings management behavior. They conclude that earnings management decreases after the DPR was established in 2004. Cohen, Dey and Lys (2008) consider regulatory changes by the Sarbanes-Oxley Act (SOX) in the US, which increases the self-monitoring and auditing role of enforcement. They show that after the introduction of SOX managers substitute accrual earnings management with real earnings management. Samarasekera, Chang and Tarca (2012) examine UK firms that cross-listed in Germany and in the US between 2000 and 2009. The authors point out that the enforcement environment improved in Germany and the US during the sample period in comparison to the UK. They document that cross-listed firms exhibit higher earnings quality effects relative to UK firms that are not cross-listed. Taken

together, there is a wide range of empirical evidence that earnings quality is positively linked to enforcement activities.

As discussed above, prior literature that investigates earnings quality effects of mandatory IFRS adoption either uses time-invariant enforcement measures (Cai, Rahman and Courtenay, 2008; Chen et al., 2010; Ahmed, Neel and Wang, 2012) or does not incorporate enforcement effects (Capkun et al., 2008; Jeanjean and Stolowy, 2008; Zeghal, Chtourou and Fourati, 2012). Figure 3 summarizes the results of mandatory IFRS adoption studies that use the same methodology as we do to construct earnings attributes. For each study, the overview illustrates findings for the individual earnings attributes: earnings smoothing, accrual quality, absolute value of discretionary accruals (DAC), small positive earnings ($SPOS$) and timely loss recognition ($LNEG$). Cross-country evidence is inconsistent, showing positive effects (Zeghal, Chtourou and Fourati, 2012) negative effects (Ahmed, Neel and Wang, 2012; Capkun, Collins and Jeanjean, 2013) and ambiguous effects (Chen et al., 2010). Single-country evidence shows either no significant effects (Paananen, 2008; Paananen and Lin, 2009) or again mixed results (Chua, Cheong and Gould, 2012).

[Figure 3 about here]

We combine both literature streams by investigating the interaction between mandatory IFRS adoption and enforcement activities on earnings quality. We believe that earnings quality effects cannot be solely explained by mandatory IFRS adoption, since enforcement is a key mechanism to ensure high-level compliance with IFRS by reducing management discretion. Therefore, we suggest that earnings quality effects of mandatory IFRS adoption should differ between countries with a strict enforcement system in place (strict enforcement countries) and countries that concurrently shift from a weak to a strict enforcement system (catch-up countries). For example, assuming enforcement changes do not become effective immediately, catch-up countries

should exhibit only marginal earnings quality effects. Since catch-up countries account for for 30%-45% of prior literature IFRS-adoption sample compositions, this could be an explanation for the inconclusive empirical results.

4 Empirical Analysis

4.1 Earnings Quality Attributes and Research Design

It is unclear what exactly the term 'earnings quality' means and thus what constitutes a well-defined measure. Most authors argue that earnings quality is closely linked to decision usefulness of financial accounting information. Others believe that comparability of financial accounting statements or compliance with accounting standards determines earnings quality. In this paper, we do not take a position on how earnings quality should be defined and about the pros and cons of the large number of different attributes (see Dechow, Ge and Schrand, 2010, for an overview). We focus on earnings attributes which are accounting-based since we are interested in investigating accounting behavior rather than capital market effects. We believe that our attributes are sufficiently valid and reliable earnings quality constructs given that they are widely used in cross-country studies investigating earnings quality effects of IFRS adoption. Thus, we use the following four earnings quality attributes: earnings smoothing, accrual quality, small positive earnings and timely loss recognition.

Earnings Smoothing

Earnings smoothing is the extent to which managers "reduce the variability of reported earnings by altering the accounting component of earnings, namely accruals" (Leuz, Nanda and Wysocki, 2003: 509). The literature disagrees as to whether earnings smoothing increases or decreases earnings quality. Some researchers argue that manager smooth reported earnings to either opportunistically communicate low operating risk in order to decrease cost

of capital or for management compensation reasons (Watts and Zimmerman, 1986; Dechow and Skinner, 2000). Following this view, smoothing behavior decreases earnings quality. Others argue that smoothing enhances the quality of earnings, since managers "use their private information about future income to smooth out transitory fluctuations and thereby achieve a more representative, hence more useful, reported earnings number" (Francis et al., 2004: 972). This paper takes the stand that smoothing behavior is a form of earnings management and thus is negatively linked to earnings quality.

We estimate three earnings smoothing measures: (1) the variability of change in net income (2) the ratio of the variability of change in net income to the variability of change in operating cash flows and (3) the correlation between total accruals and operating cash flows. For comparability reasons with prior literature that use the same method (Lang, Raedy and Wilson, 2006; Barth, Landsman and Lang, 2008; Christensen, Lee and Walker, 2008; Paananen and Lin, 2009; Chen et al., 2010; Ahmed, Neel and Wang, 2012; Chua, Cheong and Gould, 2012; Zeghal, Chtourou and Fourati, 2012), we compute our earnings smoothing measures as follows:

$$\begin{aligned}\Delta NI = {} & \alpha_0 + \alpha_1\, SIZE + \alpha_2\, GROWTH + \alpha_3\, EISSUE \\ & + \alpha_4\, LEV + \alpha_5\, DISSUE + \alpha_6\, TURN + \alpha_7\, CFO \\ & + \alpha_8\, BIG4 + \alpha_9\, NUMEX + \alpha_{10}\, XLIST + \epsilon \end{aligned} \tag{1}$$

$$\begin{aligned}\Delta CFO = {} & \alpha_0 + \alpha_1\, SIZE + \alpha_2\, GROWTH + \alpha_3\, EISSUE \\ & + \alpha_4\, LEV + \alpha_5\, DISSUE + \alpha_6\, TURN + \alpha_7\, CFO \\ & + \alpha_8\, BIG4 + \alpha_9\, NUMEX + \alpha_{10}\, XLIST + \epsilon \end{aligned} \tag{2}$$

$$\begin{aligned}CFO = {} & \alpha_0 + \alpha_1\, SIZE + \alpha_2\, GROWTH + \alpha_3\, EISSUE \\ & + \alpha_4\, LEV + \alpha_5\, DISSUE + \alpha_6\, TURN + \alpha_7\, BIG4 \end{aligned}$$

$$+ \alpha_8 \, NUMEX + \alpha_9 \, XLIST + \epsilon \tag{3}$$

$$\begin{aligned} ACC = {} & \alpha_0 + \alpha_1 \, SIZE + \alpha_2 \, GROWTH + \alpha_3 \, EISSUE \\ & + \alpha_4 \, LEV + \alpha_5 \, DISSUE + \alpha_6 \, TURN + \alpha_7 \, BIG4 \\ & + \alpha_8 \, NUMEX + \alpha_9 \, XLIST + \epsilon \end{aligned} \tag{4}$$

where: ΔNI is change in net income scaled by average total assets; CFO is operating cash flows scaled by total assets; ΔCFO is change in operating cash flows scaled by average total assets; total accruals (ACC) is change in current assets minus change in current liabilities minus change in cash plus change in current debt minus depreciation and amortization minus change in provisions scaled by total assets; $SIZE$ is the natural logarithm of market value of equity in million USD; $GROWTH$ is percentage change in sales; $EISSUE$ is percentage change in common stock; LEV is debt over total assets; $DISSUE$ is percentage change in total liabilities; $TURN$ is sales over total assets; $BIG4$ is an indicator variable that equals one if the firm's auditor is PricewaterhouseCoopers (PwC), KPMG, Arthur Andersen, Ernst & Young or Deloitte & Touche; $XLIST$ is an indicator variable that equals one if the firm is listed on a US stock exchange; $NUMEX$ is the number of exchanges on which a firm's stock is listed.

We first divide the IFRS and the benchmark samples into pre-adoption (2002-2004) and post-adoption (2006-2008) subsamples to obtain four different subsamples. Then, we estimate equations (1)-(4) as pooled regressions for the four subsamples including country and industry fixed effects. Afterwards, we divide each subsample into a catch-up and a strict enforcement partition and end up with eight distinct subsamples. Then, we use the regression residuals to calculate the smoothing measure for the respective eight subsamples. We label ΔNI^*, ΔCFO^*, ACC^* and CFO^* as the respective regression residuals.

The first measure is the variance of ΔNI^*, which displays that firms with less smooth earnings should have more volatile net income. The second measure is the variance of ΔNI^* over the variance of ΔCFO^*. If firms have volatile operating cash flows this should be linked to more volatile earnings. Again, we interpret lower values as an indicator for more earnings smoothing. The third measure is the correlation between CFO^* and ACC^*. All correlations should be negative and more negative values indicate higher earnings smoothing (Land and Lang, 2002; Myers, Myers and Skinner, 2007).

To be in line with prior literature (Barth, Landsman and Lang, 2008; Christensen, Lee and Walker, 2008; Zeghal, Chtourou and Fourati, 2012), we apply a t-test based design to test for differences in the empirical distribution of the data. For example, when investigating for the strict enforcement partition whether smoothing behavior decreased after mandatory IFRS adoption relative to benchmark countries, we first calculate the earnings quality measures for the four respective subsamples. We then employ a bootstrapping methodology to test for statistical differences. For the IFRS (benchmark) strict enforcement partition, we first select observations with replacement and then assign them to be pre or post. We then calculate the difference of the measures between the pre- and post-adoption period for respective partition and the difference-in-differences between the IFRS and benchmark partition. We repeat this procedure 1,000 times to obtain an empirical distribution of the differences. Finally, we use a t-test to test for statistical significance.

Accrual Quality

Accrual quality is defined as the state of ambiguity about how accruals map into cash flows (Francis et al., 2005). It is therefore a good proxy for the ability of financial statements to provide decision-useful information (Dechow, Ge and Schrand, 2010). We use an accrual quality measure proposed by Dechow and Dichev (2002). It assesses how accruals map into past, current and future operating cash flows. We also include control variables that have been found in prior research as related to earnings quality attributes:

$$\begin{aligned} WACC = \alpha_0 &+ \alpha_1\, CFO_{t-1} + \alpha_2\, CFO + \alpha_3\, CFO_{t+1} + \alpha_4\, SIZE \\ &+ \alpha_5\, GROWTH + \alpha_6\, LEV + \alpha_7\, DISSUE \\ &+ \alpha_8\, TURN + \alpha_9\, BIG4 + \alpha_{10}\, XLIST \\ &+ \alpha_{11}\, NUMEX + \epsilon \end{aligned} \tag{5}$$

where: working capital accruals ($WACC$) is change in current assets minus change in current liabilities minus change in cash plus change in current debt scaled by total assets.

We apply the same methodology as for the smoothing measures. We first estimate equation (5) as pooled regressions including country and industry fixed effects for the four subsamples. Then, we divide each subsample into a catch-up and a strict enforcement partition and end up with eight distinct subsamples and measure accrual quality for each subsample as the variance of the regression residuals ($WACC^*$) multiplied by minus one and interpret high (low) values as an indicator for good (weak) accrual quality. Finally, we test for differences in the empirical distribution by using a t-test based design.

Small Positive Earnings

Extant literature documents that managers try to report small profits rather than (small) losses. (e.g. Burgstahler and Dichev, 1997; Bartov, Givoly and Hayn, 2002; Daske, Gebhardt and McLeay, 2006). We measure small loss avoidance by an indicator variable SPOS that equals one for observations where net income scaled by total assets is between zero and 0.01 (Lang, Raedy and Yetman, 2003; Leuz, Nanda and Wysocki, 2003; Barth, Landsman and Lang, 2008). We use the following logistic regression to investigate whether firms located in IFRS countries have a lower likelihood of small positive earnings (SPOS) in the mandatory period relative to firms located in benchmark countries (First Test):

$$\begin{aligned}\text{Prob}\,(SPOS = 1) = \text{logit}(&\beta_0 + \beta_1\, IFRS + \beta_2\, POST2005 \\ &+ \beta_3\, IFRS * POST2005 + \beta_4\, SIZE \\ &+ \beta_5\, GROWTH + \beta_5\, EISSUE + \beta_6\, TURN \\ &+ \beta_7\, CFO + \beta_8\, BIG4 + \beta_9\, XLIST \\ &+ \beta_{10}\, NUMEX) \end{aligned} \tag{6}$$

Furthermore, we use the following regression to compare small loss avoidance behavior of IFRS firms in catch-up countries versus strict enforcement countries (Second Test):

$$\begin{aligned}\text{Prob}\,(SPOS = 1) = \text{logit}(&\beta_0 + \beta_1\, ENFCHG + \beta_2\, POST2005 \\ &+ \beta_3\, POST2005 * ENFCHG + \beta_4\, SIZE \\ &+ \beta_5\, GROWTH + \beta_6\, EISSUE + \beta_7\, TURN \\ &+ \beta_8\, CFO + \beta_9\, BIG4 + \beta_{10}\, XLIST \\ &+ \beta_{11}\, NUMEX) \end{aligned} \tag{7}$$

where: $SPOS$ is an indicator variable that equals one for observations where net income scaled by total assets is between zero and 0.01; $Post2005$ is an indicator variable that equals one for fiscal years after 2005; $ENFCHG$ is an indicator variable that equals one for countries that substantially changed their enforcement system in 2005 (Finland, Germany, Japan, the Netherlands, Norway and the UK).

Timely Loss Recognition

Recognizing losses in a timely manner rather than deferring them into future periods is an earnings quality characteristic. Prior research argues that timely loss recognition is determined by the institutional environment and thus varies across countries (Ball, Kothari and Robin, 2000; Ball, 2001). We assume that strict enforcement lowers managers' discretion over the accounting report and thus leads to a timely incorporation of economic losses. Again, we closely follow prior literature and measure timely loss recognition by using an indicator variable for large negative earnings (LNEG) that equals one for observations for which net income scaled by total assets is less than -0.20 (Lang, Raedy and Yetman, 2003; Lang, Raedy and Wilson, 2006; Barth, Landsman and Lang, 2008; Chen et al., 2010; Ahmed, Neel and Wang, 2012). We use the following logistic regression to investigate whether firms located in IFRS countries recognize economic losses in a timelier manner in the post-adoption period relative to firms located in benchmark countries (First Test):

$$\begin{aligned}\text{Prob}\,(LNEG = 1) = \text{logit}(&\beta_0 + \beta_1\, IFRS + \beta_2\, POST2005 \\ &+ \beta_3\, IFRS * POST2005 + \beta_4\, SIZE \\ &+ \beta_5\, GROWTH + \beta_5\, EISSUE + \beta_6\, TURN \\ &+ \beta_7\, CFO + \beta_8\, BIG4 + \beta_9\, XLIST \\ &+ \beta_{10}\, NUMEX) \end{aligned} \tag{8}$$

Again, we use the following regression to compare timely loss recognition of IFRS firms in catch-up countries versus strict enforcement countries (Second Test):

$$\begin{aligned}\text{Prob}\,(LNEG = 1) = \text{logit}(&\beta_0 + \beta_1\, ENFCHG + \beta_2\, POST2005 \\ &+ \beta_3\, POST2005 * ENFCHG + \beta_4\, SIZE \\ &+ \beta_5\, GROWTH + \beta_6\, EISSUE + \beta_7\, TURN \\ &+ \beta_8\, CFO + \beta_9\, BIG4 + \beta_{10}\, XLIST \\ &+ \beta_{11}\, NUMEX) \end{aligned} \tag{9}$$

where: $LNEG$ is an indicator variable that equals one for observations for which net income scaled by total assets is less than -0.20.

4.2 Sample Selection and Data

Table 1, Panel A presents information about institutional variables and the number of observations per country. Our sample period cover the years 2002 to 2008 (excluding 2005) and comprises 13 EU countries that adopted IFRS in 2005 and 14 benchmark countries that did not adopt IFRS throughout the sample period. Because of potential confounding effects we do not consider EU countries that substantively changed their enforcement system after 2005 (e.g. Sweden and Ireland in 2007). Information on the date of the IFRS adoption is taken from Christensen, Hail and Leuz (2013) who surveyed national regulators and auditors from PricewaterhouseCoopers to identify countries that substantially changed their enforcement system during 2001 and 2009 (e.g. initiated proactive reviews). [13] The regulatory quality indicator

[13] Christensen, Hail and Leuz (2013) did not receive survey replies for Malaysia, South Korea and the US and thus supply no information about enforcement changes in these countries. Based on an enforcement score by Brown, Preiato and Tarca (2013) there seem to be no regulatory changes in the enforcement systems of those countries in the respective period. Therefore, we decided to keep these countries in the sample.

(measured as of 2005) is taken from Kaufmann, Kraay and Mastruzzi (2009). We label countries with values above the sample median of 1.10 as having a strong regulatory environment. The country ranking shows that in the IFRS sample most countries (except Greece, Italy and Poland) have a strong regulatory environment. For the benchmark sample this is only true for Canada, Chile, Japan and the US.

[Table 1 about here]

Financial statement data is obtained from the Worldscope database. We exclude financial institutions (SIC-Code 6000-6799) and observations where sufficient data is not available. For the IFRS sample we delete firms that voluntarily adopted IFRS before 2005 and for the benchmark sample we delete firms that did not apply local GAAP. Voluntary adopters are identified based on a dataset provided by Daske et al. (2013). The authors argue that the classification of the Worldscope data item 'Accounting standards followed' (WS07536) contains a lot of coding errors. Therefore, they compare information from three different sources (Worldscope, Global Vantage and a hand collection of over 20,000 financial statements) and build up a dataset that provides information on whether a firm applied IFRS before 2005 or not.[14]

We also require firms to have at least two observations in the pre-adoption (2002- 2004) and at least two observations in the post-adoption (2006-2008) period. This yields an IFRS sample of 12,298 firm-year observations and a benchmark sample of 55,914 firm-year observations. We follow Barth, Landsman and Lang (2008) and Ahmed, Neel and Wang (2012) and use propensity score matching to account for firm-level characteristics that are linked to our earnings quality attributes. We match IFRS and benchmark observations based on the market value of equity, market-to-book, net income scaled by

[14] Note that if information on applied accounting standards is not provided by Daske et al. (2013), we classify firms based on information provided by the Worldscope database.

total assets and industry and yearly fixed effects separately for the pre- and post-adoption period to obtain for each period an equal number of observations in the IFRS and benchmark sample. This yields a final sample of 24,596 observations.

Panel B provides the sample composition by year and by industry for the IFRS and benchmark samples. The time and industry composition is similar across the two samples because of the propensity score matching. The number of firm-year observations is relatively constant over time. The biggest industry group is manufacturing, accounting for almost one fourth of all observations, followed by construction, with one fifth of all observations.

Table 2 reports univariate statistics for the pre- and post-adoption period for the IFRS and the benchmark samples respectively. For the pre-adoption period we find that IFRS firms have a higher operating cash flows growth (ΔCFO), higher cash flows (CFO), a smaller proportion of total accruals (ACC) and working capital accruals ($WACC$) and a smaller likelihood of small positive earnings ($SPOS$) relative to benchmark firms. In contrast, for the post-adoption period differences between IFRS and benchmark firms are not significant for all test variables. In terms of control variables descriptive statistics show that IFRS firms are smaller ($SIZE$), are less likely to be audited by a BIG4 auditor ($BIG4$), are more likely to be to be listed on a US stock exchange ($XLIST$) and are listed on less stock exchanges ($NUMEX$) relative to benchmark firms in the pre- and post-adoption period. In the pre-adoption period IFRS firms have a smaller sales growth ($GROWTH$), issue less equity ($EISSUE$) and debt ($DISSUE$), have lower leverage (LEV) and a higher proportion of sales ($TURN$) relative to benchmark firms, whereas opposite effects show up for the post-adoption period. Variables are winsorized at the 1% and 99% percentiles.

[Table 2 about here]

4.3 Results

First Test: Earnings Quality Effects of Mandatory IFRS Adoption

Table 3, Panel A presents the results for earnings smoothing and accrual quality for the full sample. The results show that smoothing behavior intensified in the post-adoption period for IFRS and benchmark firms. Furthermore, results show that accrual quality increases in post-adoption period for IFRS and benchmark firms. Results for the difference-in-differences analysis show that the incremental effect of the variability of change in net income ($\text{Var}(\Delta NI^*)$) is negative and significant (-0.061; p<0.01). The incremental effect of the variability of change in net income relative to the variability of change in operating cash flows ($\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$) is negative and but insignificant (-0.007). A negative but significant effect shows up for the correlation between total accruals and operating cash flows ($\text{Corr}(ACC^*, CFO^*)$) (-0.026; p<0.05). For accrual quality, we again find a negative but not significant incremental effect (-0.001).

Since we expect that earnings quality effects vary between catch-up countries and strict enforcement countries, we present results for the catch-up and strict enforcement partition, which are illustrated in Panel B. For the strict enforcement partition ($ENFCHG = 0$), we find that IFRS firms exhibit an incremental increase in $\text{Var}(\Delta NI^*)$ (0.035; p<0.05), in $\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$ (0.059; p<0.01), in $\text{Corr}(ACC^*, CFO^*)$ (0.019) and a decrease in accrual quality (-0.007). For the catch-up partition ($ENFCHG = 1$), we find that IFRS firms exhibit an incremental decrease in $\text{Var}(\Delta NI^*)$ (-0.202; p<0.01), in $\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$ (-0.098; p<0.01), in $\text{Corr}(ACC^*, CFO^*)$ (-0.104; p<0.01) and an incremental increase in accrual quality (0.009).

[Table 3 about here]

Table 4 presents the logit regression results for small positive earnings (SPOS) and timely loss recognition (LNEG) of models (6) and (8). For both earnings quality attributes we apply three separate logistic regressions: full sample, strict enforcement partition ($ENFCHG = 0$) and catch-up partition ($ENFCHG = 1$). All logistic regressions include control variables. Considering $SPOS$ and the full sample regression, we find that the coefficient ($POST2005 * IFRS$) is negative and insignificant. Thus, we do not find that firms in IFRS countries are less likely to report small positive earnings in the post-adoption period. The same is true for the strict enforcement partition ($ENFCHG = 0$). Again, the coefficient of $POST2005 * IFRS$ is negative and insignificant. We find a negative but significant effect for the catch-up partition ($ENFCHG = 1$). Results for timely loss recognition are similar across the three partitions and indicate that IFRS firms recognize bad news in a more timely manner in the post-adoption period relative to the benchmark sample. However, the coefficient ($POST2005 * IFRS$) is only significant for the full sample and the strict enforcement partition ($ENFCHG = 0$).

[Table 4 about here]

Second Test: Impact of Enforcement Changes for IFRS Adopters

To investigate the enforcement effect on mandatory IFRS adoption, we partition the IFRS subsample into a strict enforcement ($ENFCHG = 1$) and a catch-up ($ENFCHG = 0$) subsample. Table 5, Panel A shows the results for earnings smoothing and accrual quality. Again, we employ a difference-in-differences design. Results indicate that earnings smoothing increases after mandatory IFRS adoption in both subsamples. The incremental effect of firms located in catch-up countries compared to strict enforcement countries is negative and significant for $\text{Var}(\Delta NI^*)$, $\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$ and for $\text{Corr}(ACC^*, CFO^*)$. We obtain a positive and weakly significant incremental effect for accrual quality.

In the previous tests we label Greece, Italy and Poland as a having a strict enforcement system, although these countries have a weak regulatory environment. Enforcement systems that operate in a weak regulatory environment might be ineffective. Therefore, we exclude all observations from countries with a weak regulatory environment. This yields a subsample with observations from IFRS countries that have a strong regulatory environment ($RQ = 1$). Results are presented in Panel B. For earnings smoothing, results are consistent with Panel A. Again, findings indicate that positive accrual quality effects are more pronounced in strict enforcement than in catch-up countries in the post-adoption period. However, the incremental effect is now insignificant.

Panel C reports results for small positive earnings and timely loss recognition for the IFRS subsample and the strong regulatory environment partition. For $SPOS$ the coefficient of $ENFCHG$ is negative and significant in both regressions, indicating that strict enforcement countries are less likely to report small positive earnings in comparison to catch-up countries. However, the coefficient of the interaction term ($Post2005 * ENFCHG$) is positive and not significant in both regressions. Results for timely loss recognition indicate that firms recognize bad news in a timely manner in the post-adoption period. However, different results for firms located in catch-up countries could not be detected.

[Table 5 about here]

Overall, findings of the first and second test-series do not indicate that differences in the efficiency of enforcement systems explain differences in earnings quality in the post-adoption period. Thus, earnings quality effects of mandatory IFRS adoption seem not to depend on enforcement activities.

4.4 Robustness Tests

We perform several robustness tests to verify our results. First, we rerun the difference-in-differences analysis using raw values instead of residuals to examine whether our main results are sensitive to alternative measurements of the dependent variables (Christensen, Lee and Walker, 2008; Ahmed, Neel and Wang, 2012). Second, we verify that the sample composition does not drive the results. Since France and the UK (Japan and the US) account for approximately 40% of the IFRS (benchmark) sample, we restrict the influence of these countries. Therefore, we randomly choose 500 observations from France and the UK respectively and we additionally require the benchmark sample to contain Japan and the US with no more than 500 observations each. Afterwards, we rerun all tests. Third, prior literature acknowledges that firms might use earnings management during the transition to mandatory IFRS adoption (Capkun et al., 2008; Jeanjean and Stolowy, 2008). To address this concern, we exclude the transition year 2004 from the analysis. Results are presented in Table 6. For the three smoothing measures and accrual quality we obtain similar results to the results of the main analysis presented above. The same is true for $SPOS$ and $LNEG$. The regression results are qualitatively similar. To sum up, the robustness tests support the results obtained above.

[Table 6 about here]

5 Disclosure Compliance

In the previous analysis we investigate whether enforcement of accounting standards impact the quality of financial statements for a large number of firms in 13 European countries. We assess the quality of financial statements according to four different earnings quality attributes which are based on broad and aggregate financial statement numbers. Using earnings quality constructs as proxies for the quality of financial statements usually raises validity concerns.

Therefore, we follow a complementary strategy by hand-collecting disclosure compliance data for a small sample of firms that voluntarily adopted IFRS in Austria and Germany. We select both countries because (1) they have very similar institutional environments, (2) they have a substantial quantity of firms that voluntarily adopted IFRS, (3) they had no institutional oversight enforcement mechanism in place before 2005 and most important (4) only Germany substantially changed its enforcement system in the post-adoption period. We examine disclosure compliance because prior literature argues that enforcement is a key mechanism to ensure high-level compliance with disclosure requirements (e.g. Hope, 2003; Ernstberger, Hitz and Stich, 2012; Glaum et al., 2013). Therefore, we expect that changes in the disclosure compliance between the pre- and post-adoption period should be more pronounced in countries that substantially changed their enforcement system. Thus, we expect compliance effects to be more pervasive in the German subsample.

We assess compliance with disclosure requirements for the fiscal years 2004 (pre-adoption) and 2008 (post-adoption) based on four International Accounting Standards: IAS 17 (Leases), IAS 33 (Earnings per Share), IAS 37 (Provisions, Contingent Liabilities and Contingent Assets) and IAS 38 (Intangible Assets). We selected these accounting standards because disclosure requirements did not change during 2004 and 2008. Based on the extent to which a firm complies with disclosure requirements related to the four standards, we construct an aggregate disclosure compliance score (CSCORE). Additionally, we use the total number of words in the notes to the consolidated financial statement (WORDS) as an alternative compliance measure. To control for firm-level disclosure compliance drivers, we include size, profitability, ownership structure, IFRS experience, audit quality and US listing as control variables in the analysis (Hodgdon et al., 2009; Cascino and Gassen, 2012; Glaum et al., 2013). We use the following regression design (including industry fixed effects) to investigate whether compliance changes are more

pronounced in Germany in the mandatory period relative to firms located in Austria:

$$\begin{aligned} COMPL = {} & \gamma_1 \, POST2005 + \gamma_2 \, POST2005 \, GERMANY + \gamma_3 \, SIZE \\ & + \gamma_4 \, ROA + \gamma_5 \, CLOSEHELD + \gamma_6 \, IFRSEXP \\ & + \gamma_6 \, BIG4HAND + \gamma_7 \, XLIST + \epsilon \end{aligned} \tag{10}$$

where: $COMPL$ is either $CSCORE$ or $LNWORDS$; $CSCORE$ reflects to which extent a firm complies with disclosure requirements related to IAS 17, IAS 33, IAS 37 and IAS 38; $WORDS$ is the total number of words in the notes of the firms' consolidated annual report; $LNWORDS$ is the natural logarithm of WORDS; $GERMANY$ is an indicator variable that equals one for observations located in Germany; ROA is earnings before interest and taxes over total assets; $CLOSEHELD$ is the percentage of closely held shares; $IFRSEXP$ is the number of years since the firm voluntarily adopted IFRS for the first time; $BIG4HAND$ is an indicator variable that equals one if the firm's auditor is PricewaterhouseCoopers (PwC), KPMG, Arthur Andersen, Ernst & Young or Deloitte & Touche (hand-collected).

Based on the Worldscope universe we identify 61 Austrian and 372 German firms that voluntarily adopted IFRS. We exclude observations when (1) we are unable to collect consolidated annual reports for the fiscal years 2004 and 2008,[15] (2) the 2004 annual report indicates that the firm did not voluntarily adopted IFRS or (3) we are unable to calculate all control variables. This yields 30 Austrian and 248 German firms. In order to obtain a balanced sample, we randomly select 30 German voluntary adopters. The final sample consists of 120 firm-year observations. Table 7, Panel A shows the descriptive statistics for the compliance measures $CSCORE$, $WORDS$ and $LNWORDS$

[15] Consolidated annual reports that could not be downloaded from web pages were requested via e-mail.

and for the control variables. Austrian and German firms show on average a disclosure compliance of 75% to 80% and write on average 10,200 to 11,600 words in the notes. Univariate tests show that disclosure compliance measures do not differ between Austrian and German firms, whereas both subsamples differ with respect to size, ownership structure, IFRS experience, audit quality and US listings. Panel B displays changes in the compliance measures between the pre- and post-adoption period for the Austrian and German subsamples. The levels indicate that disclosure compliance is higher in Germany in the pre- and post-adoption period in comparison to Austria. In addition, results show that that compliance significantly increases in Austria and Germany over time and that increasing compliance with IAS 37 seems to be the main driver. However, incremental effects of firms located in Austria compared to Germany are (except for IAS 33) not significant. Panel C reports the regression results. Both models show a significant increase of compliance over time ($Post2005$) and no effect for enforcement changes ($Post2005 * GERMANY$). Taking together, the results indicate that the level of compliance increases over time and that enforcement seems to have no influence on that effect.

[Table 7 about here]

6 Conclusion

Since 2005 European publicly listed firms have been mandated to apply IFRS. Furthermore, member states are requested to establish an accounting enforcement system that ensures high-level compliance with IFRS. Therefore, EU countries had to set up new enforcement agencies or had to adjust their enforcement systems accordingly. Basically, two types of EU countries adopted IFRS in 2005: (1) countries that already had a strict enforcement system in place before 2005 and (2) countries that had to substantially change their enforcement system.

We investigate whether earnings quality effects are more pronounced in the post-adoption period in EU countries that substantially changed their enforcement system of accounting standards in comparison to EU countries that already had a strict enforcement system in place. Using a cross-country setting with mandatory IFRS adopting firms from 13 EU countries and 14 benchmark countries and 24,596 firm-year observations, we specifically examine four earnings quality dimensions: earnings smoothing, accrual quality, small positive earnings and timely loss recognition.

The empirical analysis gives inconclusive results for our earnings quality measures. We find weak evidence that adopting IFRS with a strict enforcement system is associated with less earnings smoothing in comparison to countries that changed their enforcement system. However, we are not able to find statistically significant differences between catch-up and strict enforcement countries with respect to accrual quality, small positive earnings and timely loss recognition. Thus, the conflicting results of prior literature cannot be explained by the efficiency of enforcement systems.

How earnings quality attributes encompass the quality of financial statements is debatable. Therefore, we run a small additional test where we examine the impact of enforcement on disclosure compliance and thus apply a more refined quality construct. The test results do not support the hypothesis that changes in enforcement are linked to better disclosure compliance.

Our results should be interpreted with caution. Earnings quality attributes are noisy and we are not certain how the used variables capture earnings quality per se. Moreover, the term earnings quality is not well defined and has multiple characteristics. We investigate four different dimensions of earnings quality. Maybe enforcement and/or mandatory IFRS adoption only influences other earnings quality attributes. Finally, earnings quality is shaped by a variety of determinants. We try to address this by including control vari-

ables for firms' incentives and a benchmark sample to control for the economic environment (Barth, Landsman and Lang, 2008). However, we cannot rule out the possibility that our results are biased by omitted variables.

Appendix: The Development of the Enforcement System in France (Strict Enforcement Country)

Enforcement of accounting standards has a long tradition in France. The public authority *Commission des Opérations de Bourse* (COB, Stock Exchange Commission) was established in 1967 and was responsible for the enforcement of accounting standards for listed firms (Dao, 2005). The COB acted proactively and used a risk-based approach to select firms (Nobes and Parker, 2012; Brown and Tarca, 2005). The COB had the power to force the relevant firm to correct or restate a financial statement that did not comply with French GAAP. However, a disclosure of the financial statement correction was voluntary. The COB imposed fines or took legal action if the firm did not restate the financial statement and in cases of detected fraud. The COB reviewed 120 to 150 annual financial statements per year (Dao, 2005). It aimed to review the 140 largest firms every three years and the residuals every five years. In 2003, the COB and two other regulation authorities merged forming the new public financial market regulator *Autorité des Marchés Financiers* (AMF). The AMF is equipped with the same powers. Decisions about priority examination areas and thus which firms will be reviewed are taken by the Secretary General, who also appoints the people performing the reviews. This group consists of AMF staff members and external auditors or lawyers (AMF, 2012a). If reviewers conclude that a firm potentially did not comply with IFRS the case will be referred to the Enforcement Committee, which is the only institution penalizing and sanctioning infringing firms (AMF, 2012b). In 2008 the AMF reviewed 150 annual financial, which is comparable with the pre-mandatory period level (Berger, 2010). The French enforcement system is probably the most effective mechanism in Europe as it already follows the 21 principles outlined in CESR Standard No. 1 (Dao, 2005; Brown and Tarca, 2005).

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Figure 1: Types of European Enforcement Systems before 2005

Institutional Oversight System			No Institutional
Stock Exchange	Public Authority	Private Authority	Oversight System
Norway	Belgium	UK	Finland
	Denmark		Germany
	France		Netherlands
	Italy		
	Poland		
	Portugal		
	Spain		

Source: FEE (2001). Please note that information on Greece and Poland are not provided by FEE (2001). Information on Poland is obtained by an e-mail request to the Polish Financial Supervision Authority.

Figure 2: Way of Review of European Enforcement Systems before 2005

Proactive		Reactive	No Institutional
All Listed Firms	Test Basis		Oversight System
Belgium	Denmark	UK	Finland
Italy	France	Norway	Germany
	Poland		Netherlands
	Portugal		
	Spain		

Source: FEE (2001). Please note that information on Greece and Poland are not provided by FEE (2001). Information on Poland is obtained by an e-mail request to the Polish Financial Supervision Authority.

Figure 3: Empirical Evidence on Earnings Quality Effects of Mandatory IFRS Adoption

Study	Sample Detail			Earnings Attribute						
				Smoothing						
	# IFRS Countries (Origin)	Benchmark Sample	Period	Var(ΔNI^*)	Var(ΔNI^*)/ Var(ΔCFO^*)	Corr(ACC^*, CFO^*)	Accrual Quality	DAC	SPOS	LNEG
Cross-Country										
Chen et al. (2010)	15 (EU)	No	2000-07	-***	-		+***	+***	+***	-***
Ahmed, Neel and Wang (2012)	20 (Int.)	Yes	2002-07	-**	-***	-**		-***	+	
Capkun, Collins and Jeanjean (2012)	29 (Int.)	No	2001-08	-**	-**	-**			-**	-**
Zeghal, Chtourou and Fourati (2012)	15 (EU)	No	2001-08	+***	+***	+*	+***	+***	+*	-***
Single-Country										
Chua, Cheong and Gould(2012)	Australia		2000-09	+***	+***	-			-***	+***
Paananen (2008)	Sweden		2003-06	-***	-	-			-	-
Paananen and Lin (2009)	Germany		2000-06	-	-	-			+	+

Notes: This overview summarizes studies that investigate earnings quality effects of mandatory IFRS adoption and that use the same methodology as we do to construct their earnings attributes. For each study, the overview presents sample details as well as illustrates findings for the individual earnings attributes: earnings smoothing, accrual quality, absolute value of discretionary accruals (DAC), small positive earnings ($SPOS$) and timely loss recognition ($LNEG$). The plus sign (+) denotes a positive effect after mandatory IFRS adoption and the minus sign (−) denotes a negative effect. ***/**/* marks two-sided significance at the 1/5/10% level.

Table 1: Sample Composition and Enforcement Variables
Panel A: Institutional Variables and Number of Observations per Country

Country	Institutional Variables		Number of Observations	
	Enforcement Change (ENFCHG)	Regulatory Quality (RQ)	Pre	Post
EU Countries				
Belgium	No (0)	1.29 (1)	128	131
Denmark	No (0)	1.71 (1)	192	205
Finland	Yes (1)	1.76 (1)	244	249
France	No (0)	1.10 (1)	1,183	1,210
Germany	Yes (1)	1.42 (1)	463	507
Greece	No (0)	0.88 (0)	500	561
Italy	No (0)	0.89 (0)	167	169
Netherlands	Yes (1)	1.70 (1)	244	228
Norway	Yes (1)	1.47 (1)	226	238
Poland	No (0)	0.79 (0)	170	255
Portugal	No (0)	1.20 (1)	99	113
Spain	No (0)	1.23 (1)	237	250
UK	Yes (1)	1.58 (1)	2,177	2,152
Total			*6,030*	*6,268*
Benchmark Countries (Non-IFRS)				
Argentina	No (0)	−0.64 (0)	24	29
Brazil	No (0)	0.05 (0)	120	102
Canada	No (0)	1.54 (1)	253	304
Chile	No (0)	1.43 (1)	64	56
China	No (0)	−0.26 (0)	149	160
India	No (0)	−0.21 (0)	213	243
Indonesia	No (0)	−0.48 (0)	153	125
Japan	Yes (1)	1.17 (1)	1,395	1,702
Malaysia	n.a. (0)	0.52 (0)	395	403
Mexico	No (0)	0.32 (0)	47	57
South Korea	n.a. (0)	0.79 (0)	420	388
Taiwan	No (0)	1.08 (0)	530	559
Thailand	No (0)	0.41 (0)	207	213
US	n.a. (0)	1.54 (1)	2,060	1,927
Total			*6,030*	*6,268*

Table 1: (continued)

Panel B: Sample Composition by Year and Industry

Year	IFRS		Benchmark		Industry	IFRS		Benchmark	
	N	Perc	N	Perc		N	Perc	N	Perc
2002	1,707	13.88%	1,713	13.93%	0: Agriculture. Forestry. Fishing	124	1.01%	114	0.93%
2003	2,038	16.57%	2,045	16.63%	1: Mining	1,017	8.27%	1,043	8.48%
2004	2,285	18.58%	2,272	18.47%	2: Construction	2,623	21.33%	2,615	21.26%
2005	0	0.00%	0	0.00%	3: Manufacturing	2,833	23.04%	2,829	23.00%
2006	2,243	18.24%	2,281	18.55%	4: Transportation, Communications, Electric, Gas	1,220	9.92%	1,229	9.99%
2007	2,080	16.91%	2,066	16.80%	5: Wholesale Trade	1,567	12.74%	1,546	12.57%
2008	1,945	15.82%	1,921	15.62%	6: Finance, Insurance and Real Estate	0	0.00%	0	0.00%
					7: Retail Trade	2,283	18.56%	2,304	18.73%
					8: Services	631	5.13%	618	5.03%
Total	*12,298*	*100.00%*	*12,298*	*100.00%*	*Total*	*12,298*	*100.00%*	*12,298*	*100.00%*

Notes: The sample comprises 13 EU countries that adopted IFRS in 2005 and 14 non-adopting benchmark countries that did not adopt IFRS in the sample period. We do not consider EU countries that substantially changed their enforcement system after 2005 (e.g. Sweden and Ireland in 2007) because of potential confounding effects. Information about the date of the IFRS adoption are taken from Daske et al. (2008). Information about enforcement changes ($ENFCHG$) are taken from Christensen, Hail and Leuz (2013). The authors survey national regulators and auditors from PricewaterhouseCoopers to identify countries that substantially changed their enforcement system during 2001 and 2009 (n.a. denotes no survey reply). The regulatory quality indicator (measured as of 2005) is taken from Kaufmann, Kraay and Mastruzzi (2009). RQ equals one for scores above the sample median of 1.10. N is the number of firm-year observations. The industry classification is the first digit of the Standard Industrial Classification (SIC) Code.

Table 2: Descriptive Statistics of Model Variables

Variable	IFRS				Benchmark				IFRS-Bench	
	Pre ($N = 6,030$)		Post ($N = 6,268$)		Pre ($N = 6,030$)		Post ($N = 6,268$)		Pre	Post
	Mean	Stdev	Mean	Stdev	Mean	Stdev	Mean	Stdev	Mean	Mean
Test Variables										
ΔNI	0.015	0.106	0.004^{***}	0.092	0.013	0.105	0.004^{***}	0.089	0.002	0.001
ΔCFO	0.014	0.153	0.003^{***}	0.150	0.009	0.139	0.004^{***}	0.129	0.006^{**}	-0.001
CFO	0.069	0.130	0.064	0.123	0.056	0.119	0.063^{***}	0.115	0.013^{***}	0.001
ACC	-0.058	0.102	-0.031^{***}	0.097	-0.038	0.090	-0.033^{***}	0.083	-0.021^{***}	0.001
$WACC$	-0.001	0.088	0.008^{***}	0.084	0.007	0.079	0.007	0.074	-0.008^{***}	0.001
$SPOS$	0.069	0.253	0.068	0.251	0.079	0.269	0.068^{***}	0.253	-0.010^{**}	-0.001
$LNEG$	0.061	0.238	0.034^{***}	0.180	0.054	0.226	0.035^{***}	0.185	0.007	-0.002
Control Variables										
$SIZE$	11.530	2.022	12.002^{***}	2.119	11.846	1.995	12.176^{***}	2.067	-0.316^{***}	-0.174^{***}
$GROWTH$	0.090	0.284	0.143^{***}	0.307	0.120	0.271	0.118^{***}	0.243	-0.030^{***}	0.025^{***}
$EISSUE$	0.058	0.184	0.070	0.252	0.080	0.203	0.059^{***}	0.171	-0.023^{***}	0.011^{***}
LEV	0.219	0.180	0.226^{***}	0.182	0.237	0.215	0.216	0.200	-0.018^{***}	0.010^{***}
$DISSUE$	0.114	0.598	0.248^{***}	0.908	0.166	0.711^{**}	0.183	0.735	-0.051^{***}	0.066^{***}
$TURN$	1.181	0.764	1.098^{***}	0.699	1.037	0.727^{***}	1.100	0.740	0.144^{***}	-0.002
$BIG4$	0.651	0.477	0.630	0.483	0.669	0.470	0.676^{***}	0.468	-0.018^{**}	-0.046^{**}
$XLIST$	0.064	0.245	0.062	0.241	0.027	0.163	0.021^{***}	0.144	0.037^{***}	0.041^{***}
$NUMEX$	1.167	0.562	1.176	0.572	1.295	0.710	1.296^{***}	0.695	-0.128^{***}	-0.120^{***}

Notes: ΔNI is change in net income scaled by average total assets. CFO is operating cash flows scaled by total assets. ΔCFO is change in operating cash flows scaled by average total assets. Total accruals (ACC) is change in current assets minus change in current liabilities minus change in cash plus change in current debt minus depreciation and amortization minus change in provisions scaled by total assets. Working capital accruals ($WACC$) is change in current assets minus change in current liabilities minus change in cash plus change in current debt scaled by total assets. $SIZE$ is the natural logarithm of market value of equity in million USD. $GROWTH$ is percentage change in sales. $EISSUE$ is percentage change in common stock. LEV is debt over total assets. $DISSUE$ is percentage change in total liabilities. $TURN$ is sales over total assets. $BIG4$ is an indicator variable that equals one if the firm's auditor is PricewaterhouseCoopers (PwC), KPMG, Arthur Andersen, Ernst & Young or Deloitte & Touche and zero otherwise. $XLIST$ is an indicator variable that equals one if the firm is listed on a US stock exchange. $NUMEX$ is the number of exchanges on which a firm's stock is listed. N is the number of firm-year observations. All non-truncated variables are winsorized at the 1% and 99% percentile. ***/**/* marks two-sided significance at the 1/5/10% level.

Table 3: Impact of IFRS Adoption on Earnings Smoothing and Accrual Quality
Panel A: Full Sample

	IFRS			Benchmark				
Earnings Attribute	Pre (N=6,030)	Post (N=6,268)	Diff	Pre (N=6,030)	Post (N=6,268)	Diff	Pred	Diff&Diff
$\text{Var}(\Delta NI^*)$	0.506	0.326	-0.180^{***}	0.414	0.295	-0.119^{***}	+	-0.061^{***}
$\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$	0.549	0.449	-0.100^{***}	0.630	0.537	-0.093^{***}	+	-0.007
$\text{Corr}(ACC^*, CFO^*)$	-0.608	-0.649	-0.041^{***}	-0.584	-0.599	-0.015^{***}	+	-0.026^{**}
Accrual quality	-0.194	-0.182	0.012^{***}	-0.156	-0.144	0.012^{***}	+	-0.001

Notes: $\text{Var}(\Delta NI^*)$ is the variance of residuals from the regression of ΔNI on control variables. Var (ΔCFO^*) is the variance of residuals from a regression of ΔCFO on control variables. $\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$ is the ratio of $\text{Var}(\Delta NI^*)$ to $\text{Var}(\Delta CFO^*)$. $\text{Corr}(ACC^*, CFO^*)$ is the partial Spearman correlation between the residuals from the regression of ACC and CFO on control variables. Accrual quality is the variance of residuals obtained from a regression of working capital accruals on lagged, current and future operating cash flows as well as control variables multiplied by minus one. $\text{Var}(\Delta NI^*)$ and accrual quality are multiplied by 100. Higher (lower) values of all four attributes indicate good (poor) earnings quality. N is the number of firm-year observations. ***/**/* marks two-sided significance at the 1/5/10% level.

Table 3: (continued)
Panel B: Partition on Enforcement Change

ENFCHG=0	IFRS			Benchmark				
Earnings Attribute	Pre (N=2,676)	Post (N=2,894)	Diff	Pre (N=4,635)	Post (N=4,566)	Diff	Pred	Diff&Diff
$\text{Var}(\Delta NI^*)$	0.354	0.255	-0.099^{***}	0.480	0.346	-0.134^{***}	+	0.035^{**}
$\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$	0.446	0.408	-0.038^{*}	0.657	0.559	-0.097^{***}	+	0.059^{***}
$\text{Corr}(ACC^*, CFO^*)$	−0.675	−0.680	−0.005	−0.564	−0.588	-0.024^{*}	+	0.019
Accrual quality	−0.165	−0.161	0.004	−0.173	−0.163	0.010^{**}	+	−0.007

ENFCHG=1	IFRS			Benchmark				
Earnings Attribute	Pre (N=3,354)	Post (N=3,354)	Diff	Pre (N=1,395)	Post (N=1,702)	Diff	Pred	Diff&Diff
$\text{Var}(\Delta NI^*)$	0.626	0.387	-0.240^{***}	0.197	0.160	-0.037^{***}	+	-0.202^{***}
$\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$	0.613	0.477	-0.136^{***}	0.473	0.435	−0.038	+	-0.098^{***}
$\text{Corr}(ACC^*, CFO^*)$	−0.562	−0.629	-0.067^{***}	−0.681	−0.644	0.037^{**}	+	-0.104^{***}
Accrual quality	−0.217	−0.200	0.017^{***}	−0.101	−0.093	0.008^{*}	+	0.009

Notes: $\text{Var}(\Delta NI^*)$ is the variance of residuals from the regression of ΔNI on control variables. Var (ΔCFO^*) is the variance of residuals from a regression of ΔCFO on control variables. $\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$ is the ratio of $\text{Var}(\Delta NI^*)$ to $\text{Var}(\Delta CFO^*)$. $\text{Corr}(ACC^*, CFO^*)$ is the partial Spearman correlation between the residuals from the regression of ACC and CFO on control variables. Accrual quality is the variance of residuals obtained from a regression of working capital accruals on lagged, current and future operating cash flows as well as control variables multiplied by minus one. $\text{Var}(\Delta NI^*)$ and accrual quality are multiplied by 100. Higher (lower) values of all four attributes indicate good (poor) earnings quality. $ENFCHG$ is an indicator variable that equals one for countries that substantially changed their enforcement system in 2005. N is the number of firm-year observations. ***/**/* marks two-sided significance at the 1/5/10% level.

Table 4: Regressions Results for Small Positive Earnings and Timely Loss Recognition

Parameter	SPOS				LNEG			
	Pred	Full	ENFCHG = 0	ENFCHG = 1	Pred	Full	ENFCHG = 0	ENFCHG = 1
Intercept	?	1.354***	1.143***	0.706***	?	0.081	0.327	0.413
		(0.174)	(0.228)	(0.309)		(0.277)	(0.329)	(0.557)
$IFRS$	?	0.082	−0.599***	1.193***	?	−0.048	0.286**	−0.688***
		(0.071)	(0.095)	(0.114)		(0.097)	(0.134)	(0.234)
$Post2005$	?	0.057	−0.085	0.321***	?	0.364***	0.354***	0.156
		(0.070)	(0.094)	(0.110)		(0.106)	(0.112)	(0.344)
$Post2005 * IFRS$	−	−0.081	0.132	−0.387***	+	0.317**	0.585***	0.341
		(0.101)	(0.134)	(0.157)		(0.151)	(0.220)	(0.370)
Controls		Yes	Yes	Yes		Yes	Yes	Yes
R^2		0.043	0.030	0.065		0.130	0.121	0.150
N		24,596	14,771	9,825		24,596	14,771	9,825

Notes: This table presents the logit regression results of models (6) and (8). $SPOS$ is an indicator variable that equals one for observations where net income scaled by total assets is between zero and 0.01. $LNEG$ is an indicator variable that equals one for observations where net income scaled by total assets is less than -0.20. All regressions include control variables. $IFRS$ is an indicator variable that equals one for all IFRS adopting countries. $Post2005$ is an indicator variable that equals one for fiscal years after 2005. Values in brackets are standard errors. N is the number of firm-year observations. ***/**/* marks two-sided significance at 1/5/10% level.

Table 5: Impact of Enforcement Change for IFRS Adopters

Panel A: IFRS Adopter Sample

IFRS countries	ENFCHG=1			ENFCHG=0				
Earnings Attribute	Pre (N=3,354)	Post (N=3,374)	Diff	Pre (N=2,676)	Post (N=2,894)	Diff	Pred	Diff&Diff
$\text{Var}(\Delta NI^*)$	0.626	0.387	-0.240^{***}	0.354	0.255	-0.099^{***}	$+/-$	-0.140^{***}
$\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$	0.613	0.477	-0.136^{*}	0.446	0.408	-0.038^{***}	$+/-$	-0.098^{***}
$\text{Corr}(ACC^*, CFO^*)$	-0.562	-0.629	-0.067^{***}	-0.675	-0.680	-0.005	$+/-$	-0.062^{***}
Accrual quality	-0.217	-0.200	0.017^{***}	-0.165	-0.161	0.004	$+/-$	0.013^{*}

Panel B: IFRS Adopter and Strict Regulatory Quality

IFRS countries & $RQ = 1$	ENFCHG=1			ENFCHG=0				
Earnings Attribute	Pre (N=3,354)	Post (N=3,374)	Diff	Pre (N=1,839)	Post (N=1,909)	Diff	Pred	Diff&Diff
$\text{Var}(\Delta NI^*)$	0.626	0.387	-0.240^{***}	0.387	0.265	-0.122^{***}	$+/-$	-0.117^{***}
$\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$	0.613	0.477	-0.136^{***}	0.477	0.436	-0.041^{*}	$+/-$	-0.095^{***}
$\text{Corr}(ACC^*, CFO^*)$	-0.562	-0.629	-0.067^{***}	-0.623	-0.644	-0.021	$+/-$	-0.046^{*}
Accrual quality	-0.217	-0.200	0.017^{***}	-0.162	-0.156	0.006	$+/-$	0.011

Notes: $\text{Var}(\Delta NI^*)$ is the variance of residuals from the regression of ΔNI on control variables. Var (ΔCFO^*) is the variance of residuals from a regression of ΔCFO on control variables. $\text{Var}(\Delta NI^*)/\text{Var}(\Delta CFO^*)$ is the ratio of $\text{Var}(\Delta NI^*)$ to $\text{Var}(\Delta CFO^*)$. $\text{Corr}(ACC^*, CFO^*)$ is the partial Spearman correlation between the residuals from the regression of ACC and CFO on control variables. Accrual quality is the variance of residuals obtained from a regression of working capital accruals on lagged, current and future operating cash flows as well as control variables multiplied by minus one. $\text{Var}(\Delta NI^*)$ and accrual quality are multiplied by 100. Higher (lower) values of all four attributes indicate good (poor) earnings quality. $ENFCHG$ is an indicator variable that equals one for countries that substantially changed their enforcement system in 2005. RQ is an indicator variable that equals one for countries that have a regulatory quality score as of 2005 above the sample median of 1.10. N is the number of firm-year observations. ***/**/* marks two-sided significance at the 1/5/10% level.

Table 5: (continued)

Panel C: Small Positive Earnings and Timely Loss Recognition

Parameter	SPOS			LNEG		
	Pred	IFRS	IFRS & RQ= 1	Pred	IFRS	IFRS & RQ= 1
Intercept	?	1.135***	1.409***	?	−0.979**	−0.961**
		(0.260)	(0.290)		(0.398)	(0.410)
$ENFCHG$	?	−0.550***	−0.380***	?	−0.266*	−0.089
		(0.106)	(0.121)		(0.141)	(0.156)
$Post2005$	-	0.042	−0.113	+	0.889***	0.857***
		(0.096)	(0.125)		(0.190)	(0.219)
$Post2005 * ENFCHG$	+/-	0.106	0.043	+/-	−0.427*	−0.381
		(0.147)	(0.167)		(0.230)	(0.254)
Controls		Yes	Yes		Yes	Yes
R^2		0.021	0.016		0.137	0.149
N		12,298	10,476		12,298	10,476

Notes: This table presents the logit regression results of models (7) and (9). $SPOS$ is an indicator variable that equals one for observations where net income scaled by total assets is between zero and 0.01. $LNEG$ is an indicator variable that equals one for observations where net income scaled by total assets is less than -0.20. All regressions include control variables. $IFRS$ is an indicator variable that equals one for all IFRS adopting countries. $Post2005$ is an indicator variable that equals one for fiscal years after 2005. $ENFCHG$ is an indicator variable that equals one for countries that substantially changed their enforcement system in 2005. RQ is an indicator variable that equals one for countries that have a 2005 regulatory quality score above the sample median of 1.10. Values in brackets are standard errors. N is the number of firm-year observations. ***/**/* marks two-sided significance at 1/5/10% level.

Table 6: Robustness Tests

Earnings Attribute	Diff&Diff (Full)	Diff&Diff (ENFCHG=0)	Diff&Diff (ENFCHG=1)	Diff&Diff (IFRS)	Diff&Diff (IFRS & RQ=1)
Raw Values					
Var(ΔNI)	0.015	0.241***	−0.416***	−0.290***	−0.264***
Var(ΔNI)/ Var(ΔCFO)	−0.014	0.073**	−0.183***	−0.128***	−0.132***
Corr(ACC^*, CFO^*)	−0.014	0.026	−0.106***	−0.054**	−0.020
Sample Composition					
Var(ΔNI^*)	−0.085***	−0.010	−0.176***	−0.133***	−0.117***
Var(ΔNI^*)/ Var(ΔCFO^*)	−0.005	0.047*	−0.060*	−0.093**	−0.095***
Corr(ACC^*, CFO^*)	0.012	0.038*	−0.050*	−0.027	−0.046*
Accrual quality	0.006	−0.011*	0.034***	0.031***	0.011
Transition Year					
Var(ΔNI^*)	0.000	0.071***	−0.101***	−0.079***	−0.068***
Var(ΔNI^*)/ Var(ΔCFO^*)	0.058***	0.124***	0.004	−0.109***	−0.113***
Corr(ACC^*, CFO^*)	−0.031*	0.017	−0.083***	−0.072***	−0.076***
Accrual quality	0.009*	0.008	0.011*	0.007	0.008

Earnings Attribute	Post2005*IFRS (Full)	Post2005*IFRS (ENFCHG=0)	Post2005*IFRS (ENFCHG=1)	Post2005*IFRS (IFRS)	Post2005*ENFCHG (IFRS & RQ=1)
Sample Composition					
$SPOS$	−0.041	0.136	−0.491*	0.187*	0.123*
$LNEG$	0.277	0.606**	−0.330	−0.218	−0.386
Transition Year					
$SPOS$	−0.087	0.249	−0.425***	0.182	0.069
$LNEG$	0.583	0.745**	0.380	−0.381	−0.243

Notes: This table summarizes the results of three separate robustness analysis. First, we rerun the difference-in-differences analysis using raw values instead of residuals. Second, we verify that the sample composition does not drive the results and thus restricting the influence of France, the UK, Japan and the US by containing no more than 500 observations each. Third, we exclude the transition year 2004 from the analysis. Var(ΔNI) is the variance of ΔNI. Var (ΔCFO) is the variance of ΔCFO. Var(ΔNI)/ Var(ΔCFO) is the ratio of Var(ΔNI) to Var(ΔCFO). Corr(ACC, CFO) is the partial Spearman correlation between ACC and CFO. All other variables are defined in previous tables. ***/**/* marks two-sided significance at 1/5/10% level.

Table 7: Compliance Test
Panel A: Compliance Descriptive Statistics

Variable	Austria ($N = 60$)			Germany ($N = 60$)		
	Mean	Median	Stdev	Mean	Median	Stdev
Test Variables						
$CSORE$	0.749	0.750	0.154	0.792	0.833	0.176
$WORDS$	10.222	9.366	4.586	11.606	10.220	7.095
$LNWORDS$	9.137	9.144	0.441	9.175	9.232	0.639
Control Variables						
$SIZE$	12.291	12.319	1.499	11.459***	10.610	1.865
ROA	0.071	0.082	0.072	0.049	0.059	0.100
$CLOSEHELD$	0.439	0.505	0.303	0.320***	0.188	0.318
$IFRSEXP$	4.300	4.500	1.788	3.433***	3.000	1.701
$BIG4$	0.867		0.343	0.600***		0.494
$XLIST$	0.267		0.446	0.033***		0.181

Notes: This sample consists of 30 Austrian and 30 German firms that voluntarily adopted IFRS before 2005. Based on the Worldscope universe and the corresponding consolidated annual reports, we identify 30 Austrian and 248 German firms that voluntarily adopted IFRS. In order to obtain a balanced sample, we randomly select 30 German voluntary adopters. The yields a final sample of 120 firm-year observations. $SIZE$ is the natural logarithm of market value of equity. ROA is earnings before interest and taxes over total assets. $CLOSEHELD$ is the percentage of closely held shares. $IFRSEXP$ is the number of years since the firm voluntarily adopted IFRS for the first time. $BIG4HAND$ is an indicator variable that equals one if the firm's auditor is PricewaterhouseCoopers (PwC), KPMG, Arthur Andersen, Ernst & Young or Deloitte & Touche (hand-collected). $XLIST$ is an indicator variable that equals one if the firm is listed on a US stock exchange. N is the number of firm-year observations. All non-truncated variables are winsorized at the 1% and 99% percentile. ***/**/* marks two-sided significance at the 1/5/10% level.

Table 7: (continued)
Panel B: Mean Disclosure Compliance

Compliance	Austria				Germany				
Instrument	N	Pre	N	Post	N	Pre	N	Post	Diff&Diff
$IAS17$	24	0.522	23	0.822^{***}	19	0.649	22	0.81	-0.139
$IAS33$	30	0.831	30	0.783	30	0.767	30	0.900^{*}	0.181^{**}
$IAS37$	30	0.467	30	0.633^{**}	30	0.567	30	0.717^{**}	-0.016
$IAS38$	30	0.917	30	0.967^{*}	30	0.950	30	0.950	-0.050
$CSORE$	30	0.726	30	0.824^{***}	30	0.767	30	0.877^{***}	0.012
$WORDS$	30	7.368	30	13.075^{***}	30	8.420	30	14.792^{***}	0.665
$LNWORDS$	30	8.854	30	9.421^{***}	30	8.881	30	9.470^{***}	0.022

Notes: $IAS17$ are the disclosure compliance requirements by IAS 17.31a,b. $IAS33$ are the disclosure compliance requirements by IAS 33.70a,b. $IAS37$ are the disclosure compliance requirements by IAS 37.84 and IAS 37.85. $IAS38$ are the disclosure compliance requirements by IAS 38.118a,b,e. $CSORE$ is the average disclosure compliance, calculated using $IAS17$, $IAS33$, $IAS37$ and $IAS38$. $WORDS$ is the total number of words in the notes of the firms' consolidated annual report. $LNWORDS$ is the natural logarithm of $WORDS$. ***/**/* marks two-sided significance at the 1/5/10% level.

Table 7: (continued)
Panel C: Compliance Regression Results

Parameter	Pred	CSCORE N=120	LNWORDS N=120
$Post2005$	+	0.113^{***}	0.573^{***}
		(0.038)	(0.105)
$GERMANY$	+	0.086^{**}	0.098
		(0.041)	(0.113)
$Post2005 * GERMANY$	+	−0.020	0.036
		(0.054)	(0.149)
$SIZE$	+	−0.005	0.179^{***}
		(0.013)	(0.036)
ROA	+/-	0.322^{*}	-1.187^{**}
		(0.170)	(0.466)
$CLOSEHELD$	-	-0.113^{**}	-0.310^{**}
		(0.048)	(0.131)
$IFRSEXP$	+	-0.024^{***}	−0.035
		(0.009)	(0.025)
$BIG4HAND$	+	0.066^{*}	0.100
		(0.035)	(0.097)
$XLIST$	+	0.137^{***}	0.144
		(0.049)	(0.134)
Industry		Yes	Yes
R^2		0.31	0.51

Notes: $CSORE$ is the average disclosure compliance, which is calculated using $IAS17$, $IAS33$, $IAS37$ and $IAS38$. $WORDS$ is the total number of words in the notes of the firms' consolidated annual report. $LNWORDS$ is the natural logarithm of $WORDS$. $SIZE$ is the natural logarithm of market value of equity in million EUR. ROA is earnings before interest and taxes over total assets. $CLOSEHELD$ is the percentage of closely held shares. $IFRSEXP$ is the number of years since the firm voluntarily adopted IFRS for the first time. $BIG4HAND$ is an indicator variable that equals one if the firm's auditor is PricewaterhouseCoopers (PwC), KPMG, Arthur Andersen, Ernst & Young or Deloitte & Touche (hand-collected). $XLIST$ is an indicator variable that equals one if the firm is listed on a US stock exchange. Values in brackets are standard errors. N is the number of firm-year observations. ***/**/* marks two-sided significance at the 1/5/10% level.